

Service Manual

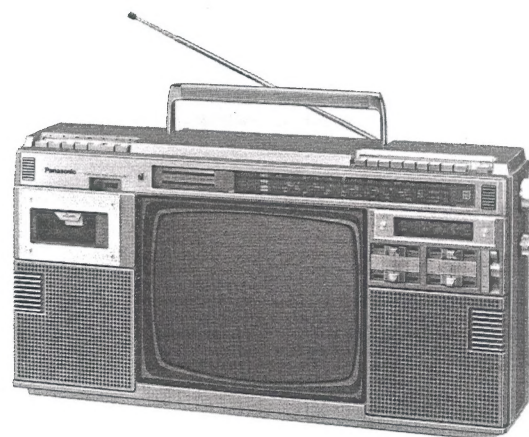
Black and White Television with Stereo Radio Cassette

TR-1200S

Chassis

No. 12B01-E

Main Manual



Specifications

Television

| | |
|------------------------------------|---|
| Power Source: | AC: 220V, 50Hz, DC: 12V |
| Power Consumption: | AC: 50W, DC: 19W |
| Antenna Impedance: | VHF/UHF/FM/SW Monopole antenna 75Ω VHF/UHF/FM/SW External antenna 75Ω |
| Receiving Channels: | VHF 2-12ch UHF 21-69ch |
| Intermediate Frequency: | Video: 38.9MHz Sound: 33.4MHz |
| Integrated Circuit: | 11 |
| Semiconductor: | 38 Transistors |
| (with Radio and Cassette Recorder) | 35 Diodes |
| Nominal Anode Voltage: | 1 H.V. Rectifier |
| Picture Tube: | 13.0KV (Zero Beam Current) |
| Speaker: | 31QJHB4, 12 inches, 90° Deflection |
| | 2-Way 4-speakers System |
| | Woofer: 12cm x 2 |
| | Tweeter: 3cm x 2 |
| Automatic Circuits: | Peak Automatic Gain Control Saw-Tooth Automatic Frequency Control Automatic Voltage Regulator |
| Dimensions: | Height: 32.6cm Width: 64.3cm Depth: 32.1cm |
| Weight: | 12.7kg |

Stereo Radio Cassette

| | |
|-------------------------------|---|
| Motor: | Mechanical governor motor |
| Frequency Response: | 80Hz — 15KHz |
| Recording System: | AC bias |
| Operation: | Push button one-touch operation with Auto-Stop and mechanical pause |
| Tape Speed: | 4.8cm/s. (1-7/8 ips.) |
| Program Time: | 1 hour with C-60 cassette tape |
| Fast Forward and Rewind Time: | Approx. 120 seconds with C-60 cassette tape |
| Track System: | 4 track 2 channel stereo recording and playback |
| Input: | MIC: sensitivity 0.25mV/applicable microphone impedance 200-600Ω LINE IN: 420mV/50KΩ LINE OUT: 380mV/47KΩ |
| Output: | EXT SP: 8Ω REMOTE: for manual start and stop |
| Radio Frequency Range: | FM 87.5—108MHz LW 145—285KHz MW 525—1605KHz SW 5.9—18.0MHz |
| Sound Output: | 5W + 5W (Max.) |

Specifications are subject to change without notice.

 **Panasonic**

Matsushita Electric Trading Co., Ltd.

P.O. Box 288, Central Osaka Japan

CODE NO. FTD7909-004

CAUTION

The high voltage supply at the picture tube anode will give an unpleasant shock, but does not supply enough current to give a fatal burn or shock.

However, secondary human reaction to otherwise harmless shocks have been known to cause injury. Always discharge the picture tube anode to the receiver chassis before handling the tube.

Certain portions of the high voltage generating circuit are dangerous and extreme caution should be observed. The picture tube is highly evacuated and, if broken, glass fragments will be violently expelled.

WHEN HANDLING THE PICTURE TUBE, ALWAYS WEAR GOGGLES AND PROTECTIVE CLOTHING.

VORSICHT

Die Hochspannung der Bildröhrenanode genügt für einen unangenehmen Schlag, ist aber nicht hoch genug um Verbrennungen oder tödliche Schläge zu bewirken.

Sekundäre Verletzungen als Folge harmloser Schläge sind jedoch vorgekommen. Vor Hantieren der Bildröhre sollte daher ihre Anode stets zum Empfängerchassis entladen werden.

Gewisse Abschnitte des Hochspannungskreises sind gefährlich; äußerste Vorsicht ist angebracht. Die Bildröhre steht unter Hochvakuum: beim Zerschlagen werden Glasstücke gefährlich umherfliegen.

BEIM HANTIEREN DER BILDROHRE IMMER SCHUTZBRILLE UND HANDSCHUHE TRAGEN!

ADJUSTMENTS

VERTICAL HEIGHT AND VERTICAL LINEARITY

- (1) These controls VR32 and VR33 should be adjusted simultaneously to give proper vertical size consistent with good vertical linearity.

Adjustment should be made to extend the picture limits approximately 3/6" (5mm) beyond the top and bottom edges of the mask.

TO ADJUST THE AGC PROPERLY

- (1) Set the channel selector to a station transmitting a strong signal.
- (2) Turn the R-F AGC control VR19 clockwise or counter-clockwise to the point where the snow noise disappears in the picture.
- (3) Check the reception on all channels.

AVR (AUTOMATIC VOLTAGE REGULATOR)

Connect a Volt meter across B+ supply line and chassis. Next make certain B+ supply voltage in +11.5V by adjusting the AVR control (VR71).

YOKE POSITION

The yoke is secured to the neck of the picture tube with a clamp and screw. To adjust the yoke and correct for picture tilt, loosen this clamp. Correct tilt and retighten the screw.

EINSTELLUNGEN

BILDHÖHE UND BILDLINEARITÄT

1. Die Regler VR32 und VR33 sollten gleichzeitig auf richtige Bildhöhe in Übereinstimmung mit guter Bildlinearität eingestellt werden.

Diese Einstellungen sollten so vorgenommen werden, daß sich die Bildgrenzen ca. 5 mm über den oberen und unteren Rand der Maske erstrecken.

RICHTIGE EINSTELLUNG DER SCHWUNDAUSGLEICHAUTOMATIK (AGC)

1. Den Kanalwähler auf einen Sender einstellen, der ein starkes Signal ausstrahlt.
2. Den HF-Schwundausgleichautomatikregler VR19 im oder entgegen dem Uhrzeigersinn so weit drehen, daß die weißen Flecken vom Bildschirm verschwinden.
3. Den Empfang auf allen Kanälen überprüfen.

AUTOMATISCHER SPANNUNGSREGLER (AVR)

Einen Spannungsmesser über die +B-Versorgungsleitung und das Chassis anschließen. Dann durch entsprechendes Verstellen des automatischen Spannungsreglers (VR71) sicherstellen, daß die +B-Speise-spannung +11,5 V beträgt.

ABLENKJOCHSTELLUNG

Das Ablenkjoch ist mit einer Klemme und Schraube am Hals der Bildröhre befestigt. Zum Einstellen des Jochs und Berichtigen der Bildschräge diese Klemme lösen. Nach dem Berichtigen der Bildschräge die Schraube wieder festziehen.

CENTERING

The picture centering device consists of two rings located at the rear of the yoke assembly. Each ring has a tab for ease of adjustment. The tabs should be rotated and moved towards or away from each other until the picture is properly centered on the screen of the picture tube.

HORIZONTAL WIDTH

Adjust the slug of coil (L403) to extend the picture about 13mm beyond the mask with the brightness control set to normal operating position.

BILDSTANDSREGELUNG

Die Einrichtung für Bildstandsregelung besteht aus zwei Ringen, die sich auf der Rückseite der Ablenkjocheinheit befinden. Jeder Ring weist eine Lamelle auf, um die Einstellung zu erleichtern. Diese Lamellen sollten durch Drehen zueinander oder voneinander weg bewegt werden, bis das Bild richtig auf dem Schirm der Bildröhre zentriert ist.

BILDBREITE

Den Kern der Spule (L403) so einstellen, daß sich das Bild ca. 13 mm über die Maske erstreckt, wenn der Helligkeitsregler auf normale Betriebsstellung eingestellt ist.

DISASSEMBLY INSTRUCTIONS — ZERLEGUNGS-ANLEITUNGEN —

REAR COVER REMOVAL

1. Remove 7 screws (A) as shown in Fig. 1.
2. Pull the rear cover toward you.

INDICATOR BLOCK REMOVAL

1. Remove the Radio tuning and TV tuning knobs from tuning shaft.

2. Remove 7 screws (B) as shown in Fig. 2.

CONTROL PANEL BLOCK REMOVAL

1. Remove the knobs on the front panel.
2. Remove 3 screws (C) as shown in Fig. 3.

TUNER BLOCK AND POWER BLOCK REMOVAL

1. Remove 2 screws (D) as shown in Fig. 4.

ENTFERNEN DER RÜCKWAND

1. Die in Abb. 1 gezeigten 7 Schrauben (A) entfernen.
2. Die Rückwand nach vorn ziehen.

ENTFERNEN DES ANZEIGEBLOCKES

1. Den Radio- und TV-Abstimmknopf von der Abstimmachse entfernen.

ENTFERNEN DES BEDIENUNGSFELDBLOCKES

1. Die Knöpfe an der Frontplatte entfernen.
2. Die in Abb. 3 gezeigten 3 Schrauben (C) entfernen.

ENTFERNEN DES TUNER-UND STROMVERSORGUNGSBLOCKES

1. Die in Abb. 4 gezeigten 2 Schrauben (D) entfernen.

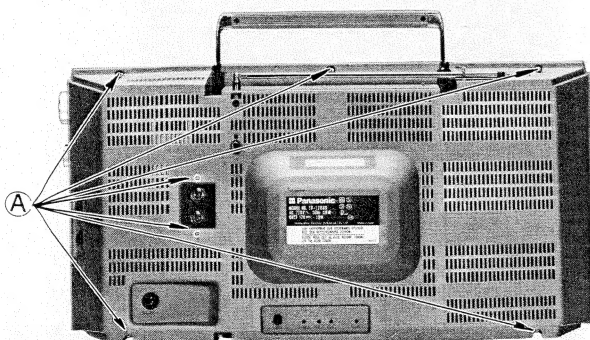


Fig. 1 Abb. 1

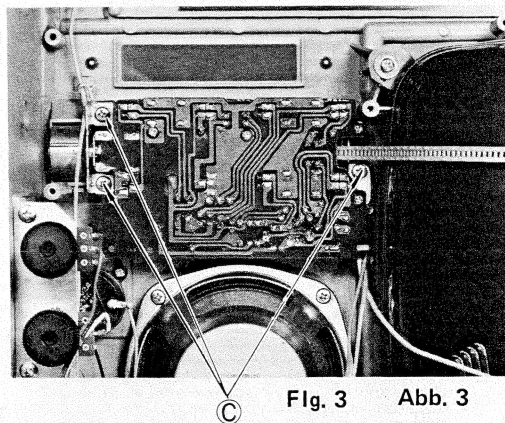


Fig. 3 Abb. 3

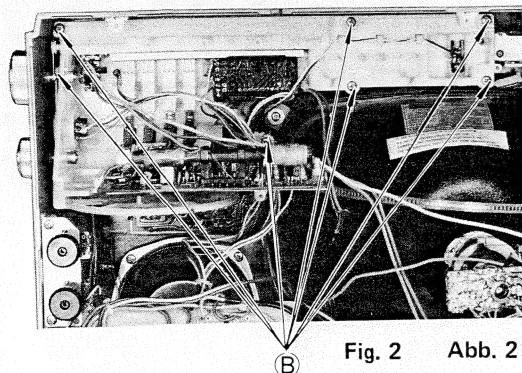


Fig. 2 Abb. 2

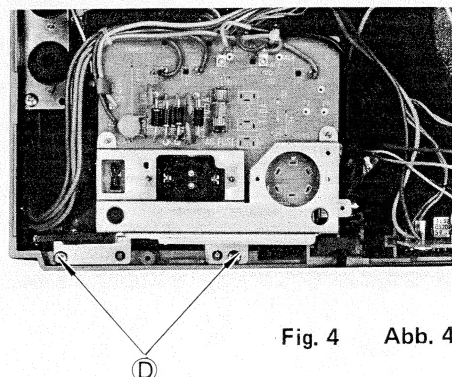


Fig. 4 Abb. 4

AUDIO CIRCUIT BOARD REMOVAL

1. Remove 7 screws ⑤ as shown in Fig. 5.

Note: When remove the Audio Circuit Board be carefully the connectors and wire.

LED CIRCUIT BOARD REMOVAL

1. Remove 2 screws ⑥ as shown in Fig. 6.

CASSETTE BLOCK REMOVAL

1. Remove 4 screws ⑦ as shown in Fig. 7

SPEAKER REMOVAL

1. Remove 12 screws ⑧ as shown in Fig. 8

ENTFERNEN DES TON-LEITERPLATTENBLOCKES

1. Die in Abb. 5 gezeigten 7 Schrauben ⑤ entfernen.

Anmerkung: Beim Entfernen der Ton-Leiterplatte auf die Steckanschlüsse und Drähte achten.

ENTFERNEN DER LED-LEITERPLATTE

1. Die in Abb. 6 gezeigten 2 Schrauben ⑥ entfernen.

ENTFERNEN DES KASSETTENBANDGERÄTBLOCKES

1. Die in Abb. 7 gezeigten 4 Schrauben ⑦ entfernen.

ENTFERNEN DER LAUTSPRECHER

1. Die in Abb. 8 gezeigten 12 Schrauben ⑧ entfernen.

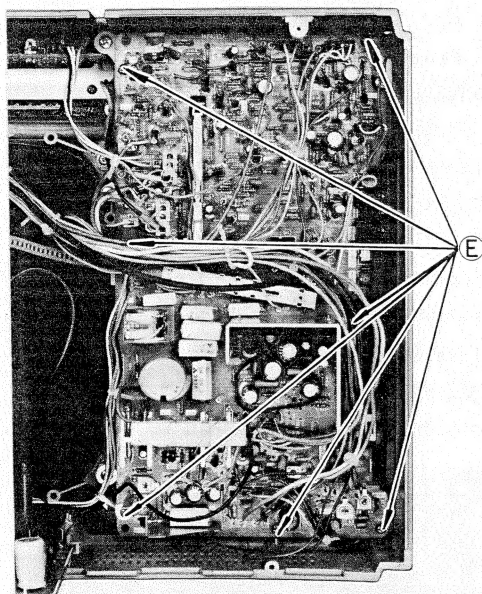


Fig. 5 Abb. 5

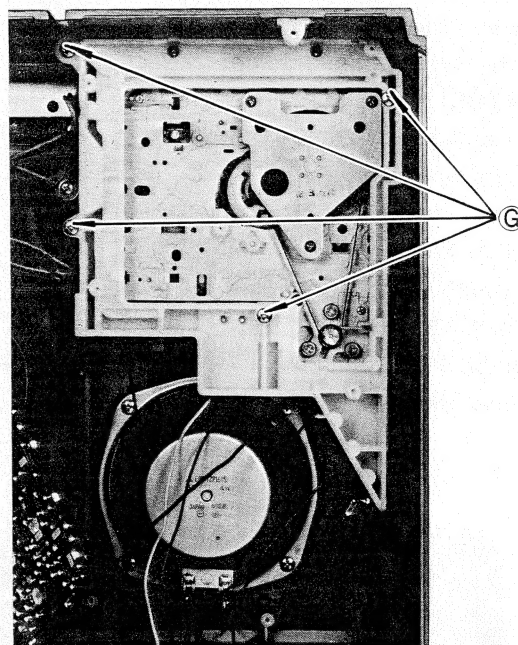


Fig. 7 Abb. 7

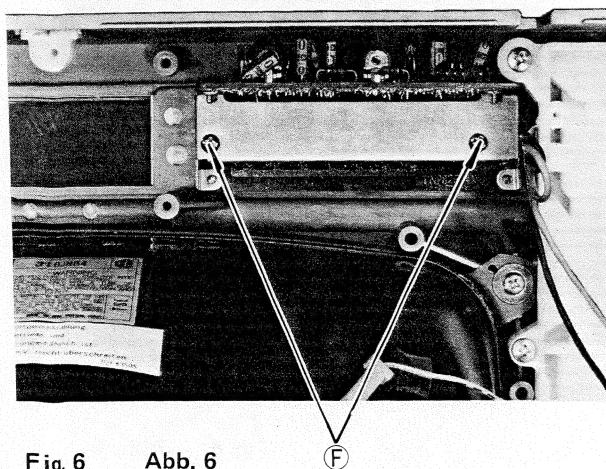


Fig. 6 Abb. 6

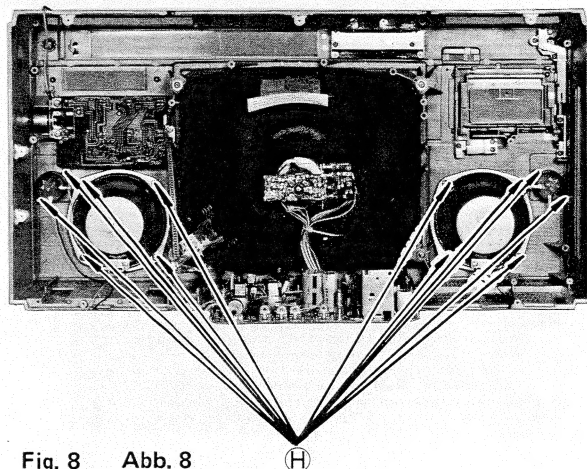


Fig. 8 Abb. 8

DIAL THREADING

Radio

1. Remove chassis from cabinet.
2. Turn dial drum to clockwise.
3. Arrows (① — ⑭) indicate correct order and indication of dial threading as shown in Fig. 9.

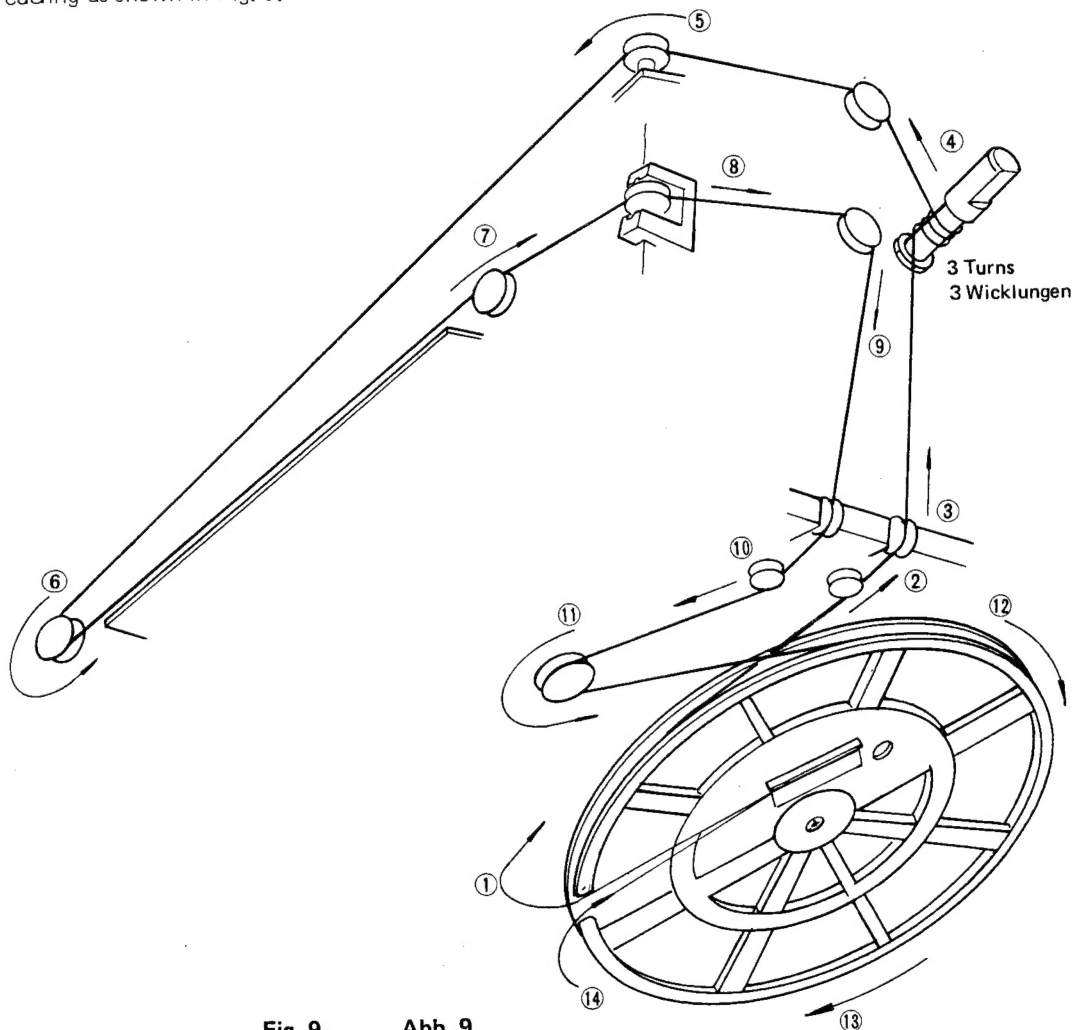


Fig. 9 Abb. 9

TV

1. Remove chassis from cabinet.
2. Turn dial drum to clockwise.
3. Arrows (① — ⑫) indicate correct order and indication of dial threading as shown in Fig. 10.

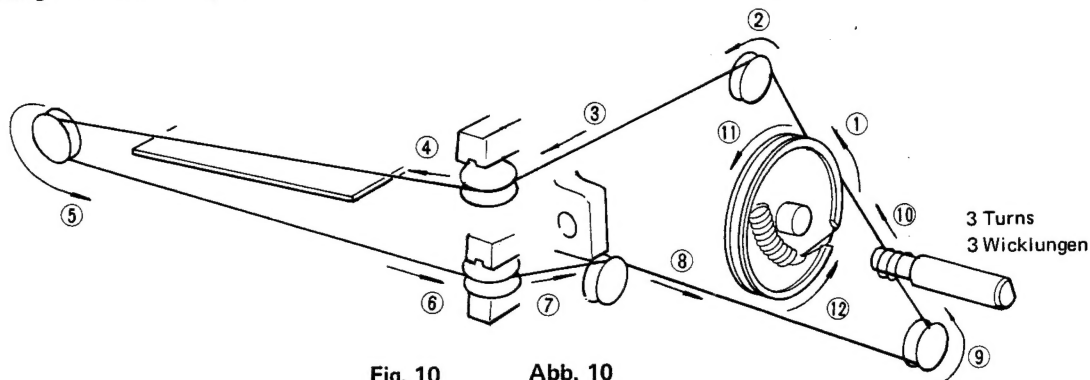


Fig. 10 Abb. 10

SPANNEN DER SKALENSCHNUR

Radioskala

1. Das Chassis vom Gehäuse entfernen.
2. Die Skalentrommel im Uhrzeigersinn drehen.
3. Die in Abb. 9 gezeigten Pfeile (① — ⑭) zeigen die richtige Reihenfolge beim Spannen der Skaleschnur an.

Fernsehskala

1. Das Chassis vom Gehäuse entfernen.
2. Die Skalentrommel im Uhrzeigersinn drehen.
3. Die in Abb. 10 gezeigten Pfeile (① — ⑫) zeigen die richtige Reihenfolge beim Spannen der Skaleschnur an.

GENERAL ALIGNMENT

ALLGEMEINER ABGLEICH

TV INDICATOR ALIGNMENT

Preparation

1. Set up voltmeter as shown in Fig. 11.
2. Maintain power supply voltage at 220 volt.

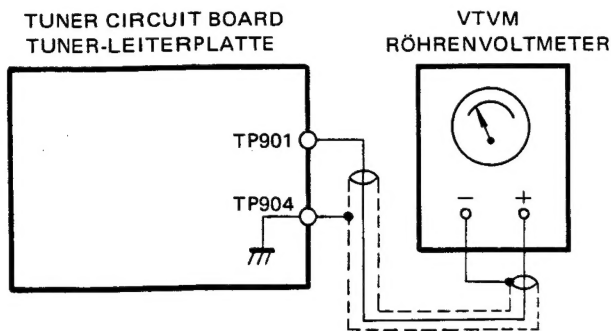


Fig. 11

Abb. 11

FERNSEHANGEIGEABGLEICH

Vorbereitung

1. Das Voltmeter wie in Abb. 11 gezeigt aufstellen.
2. Die Netzspannung auf 220 V halten.

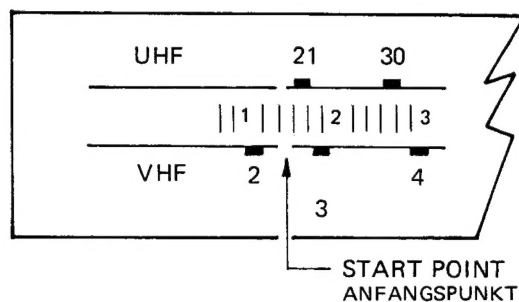


Fig. 12

Abb. 12

Alignment Procedure

1. Set selector switch to TV position and set TV Band switch to UHF position.
2. Turn the TV tuning and adjust indicator to start position as shown in Fig. 12.
3. Fully turn VR93 in the direction to increase the voltage TP901.
4. Adjust VR92 to $1.0 \pm 0.1V$.
5. Set indicator to ch58 and adjust VR93 to $13.1 \pm 0.1V$.
6. Set TV band switch to VHF position.
7. Set indicator to ch5 and fully turn VR95 in the direction to increase the voltage TP901.
8. Adjust VR94 to $4.5 \pm 0.1V$.
9. Set indicator to ch10 and adjust VR95 to $10.1 \pm 0.1V$.
10. Set indicator to ch4 and adjust VR96 to $9.5 \pm 0.1V$.

NOTE: The following condition are required.

- VHF: To obtain the picture at ch2, ch4, ch5, ch10, $\pm 0.5ch$ from the correct indication points is acceptable.
- UHF: To obtain the picture at ch21, ch25, ch50, ch58, $\pm 2ch$ from the correct indication points is acceptable.

Abgleich

1. Den Wahlschalter auf Position Fernsehen und den Fernsehbandschalter auf Position UHF stellen.
2. Den Fernseh-Abstimm- und Einstellanzeiger auf Position Start stellen, wie in Abb. 12 gezeigt.
3. VR93 bis zum Anschlag drehen, um die Spannung von TP901 zu erhöhen.
4. VR92 auf $1.0 \pm 0.1 V$ einstellen.
5. Den Anzeiger auf ch58 und VR93 auf $13.1 \pm 0.1 V$ einstellen, um beste Bildqualität zu erhalten.
6. Den Fernsehbandschalter auf Position VHF stellen.
7. Den Anzeiger auf ch5 stellen und VR95 bis zum Anschlag drehen, um die Spannung von TP95 zu erhöhen.
8. VR94 auf $4.5 \pm 0.1 V$ einstellen.
9. Den Anzeiger auf ch10 und VR95 auf $10.1 \pm 0.1 V$ einstellen.
10. Den Anzeiger auf ch4 und VR96 auf $9.5 \pm 0.1 V$ einstellen.

Anmerkung: Voraussetzungen zum Abgleich

- VHF: Um bei ch2, ch4, ch5 und ch10 ein bild zu erhalten, ist eine Abweichung von $\pm 0.5ch$ von der korrekten Einstellung zulässig.
- UHF: Um bei ch21, ch25, ch50 und ch58 ein Bild zu erhalten, ist eine Abweichung von $\pm 2ch$ der korrekten Einstellung zulässig.

VIDEO I-F ALIGNMENT

BILD-ZF-ABGLEICH

EQUIPMENT CONNECTION

Disconnect the jumper lead (J401, J402).

Power Supply

Supply DC +11.5V to TP91.

Supply DC +15V to TP901.

Oscilloscope, Sweep Generator and Marker Generator.

Connect as shown in Fig. 13.

VIF SWEEP AND
MARKER GENERATOR
BILD-ZF- UND
FREQUENZMARKENGGENERATOR

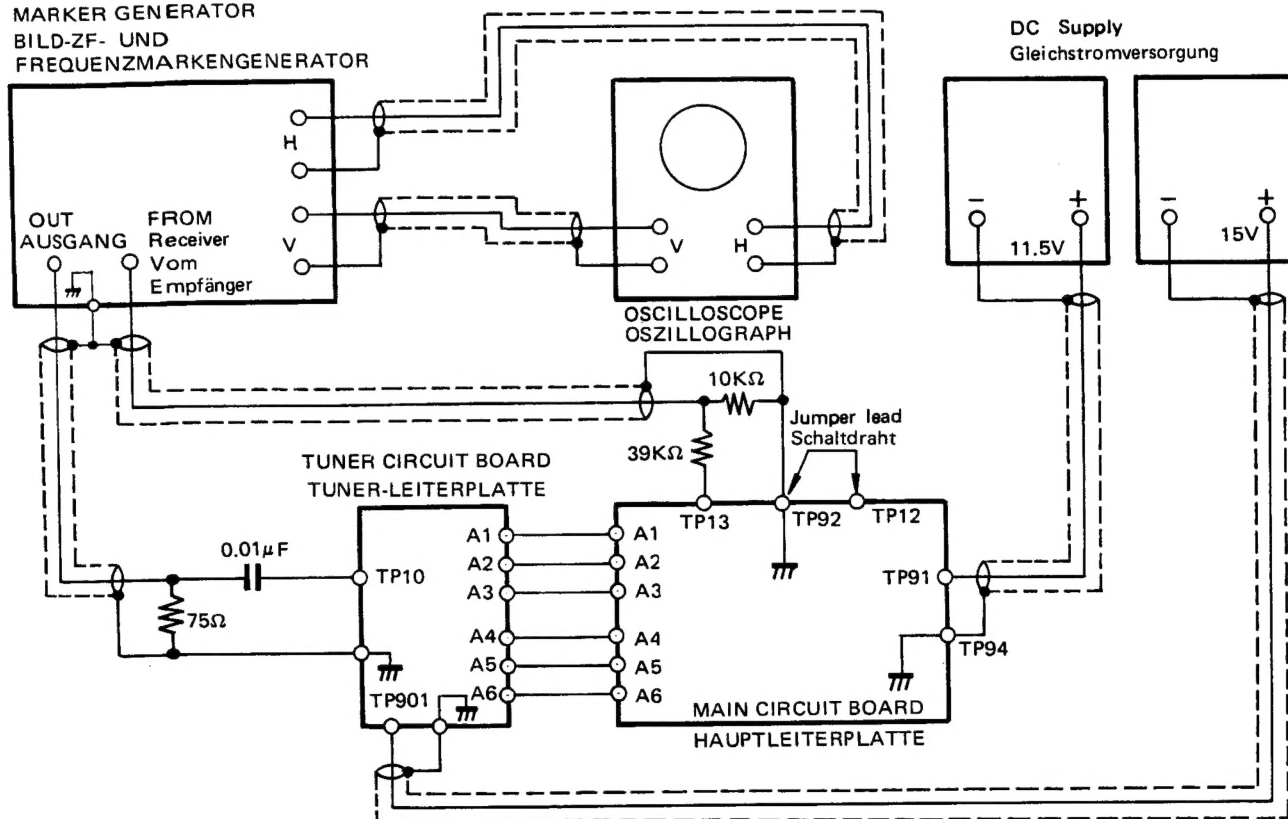


Fig. 13

Abb. 13

| STEP | ALIGNMENT | WAVEFORM | WELLENFORM | Schritt | ABGLEICH |
|------|--|----------|------------|---------|---|
| 1 | Adjust L103 to the minimum gain at 40.40MHz marker position as shown in Fig. 14. | | | 1 | L103 gemäß Abb. 14 auf minimale Verstärkung bei der 40.40 MHz-Markenposition einstellen. |
| 2 | Adjust L109 to the maximum gain at 38.90MHz marker position as shown in Fig. 14. | | | 2 | L109 gemäß Abb. 14 auf minimale Verstärkung bei der 38.90 MHz-Markenposition einstellen. |
| 3 | Adjust L106 and L108 to the maximum gain at 36.65MHz marker position as shown in Fig. 14 | | | 3 | L106 und L108 gemäß Abb. 14 auf maximale Verstärkung bei der 36.65 MHz-Markenposition einstellen. |

Fig. 14

Abb. 14

SOUND I-F ALIGNMENT

TON-ZF-ABGLEICH

EQUIPMENT CONNECTION

Disconnect the jumper lead (J401, J402)

Power Supply

Supply DC +11.5V to TP91.

Oscilloscope, Sweep Generator and Marker Generator.

Connect as shown in Fig. 15.

GERÄTEANSCHLUSS

Den Schalt draht trennen (J401, J402).

Stromversorgung

TP91 +11.5 V Gleichstrom zuleiten.

Oszillograph, Kippgenerator und Frequenzmarkengenerator.

Gemäß Abb. 15 anschließen.

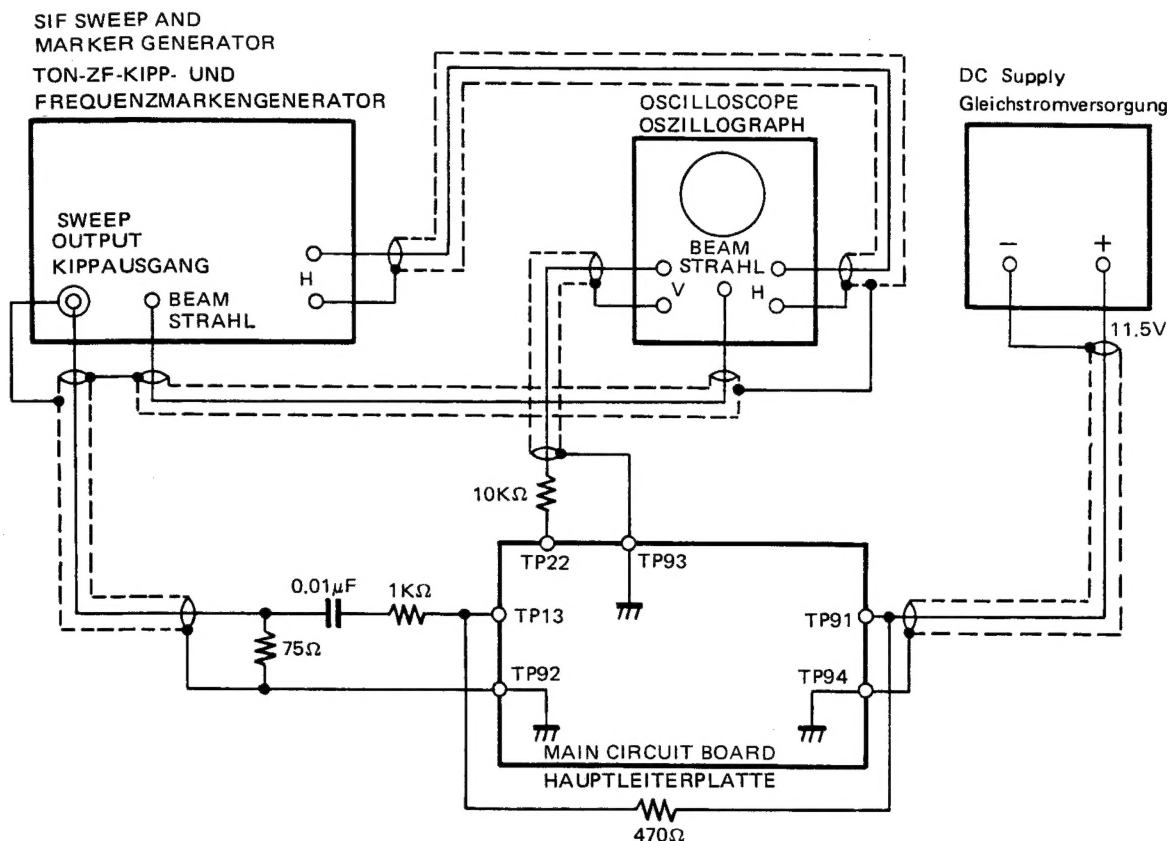


Fig. 15

Abb. 15

| STEP | ALIGNMENT | WAVEFORM | WELLENFORM | Schritt | ABGLEICH |
|------|--|--|------------|---------|---|
| 1 | Adjust both L201 and L202 to the maximum gain at 5.5MHz AM signal as shown in Fig. 16. | <p>Reduce the difference to minimum Unterschied auf Minimale verringern.</p> | | 1 | L201 und L202 gemäß Abb. 16 auf maximale Verstärkung beim 5.5 MHz-AM-Signal drehen. |
| 2 | Adjust L202 to reduce the difference of AM signal as shown in Fig. 17. | | | 2 | L202 gemäß Abb. 17 auf Verringerung des AM-Signalunterschieds einstellen. |
| 3 | Adjust L202 until the 5.5 MHz marker is at the center of slanted line as shown in Fig. 17. | | | 3 | L202 gemäß Abb. 17 verstellen, bis sich die 5.5 MHz-Marke in der Mitte der schrägen Linie befindet. |

MW I-F & R-F ALIGNMENT (Equipment required: Signal Generator; 8Ω speaker or dummy load.)

Output of signal generator should be no higher than necessary to obtain an output reading.
 Set Volume control to maximum. Set TV/Radio/Tape/Line in selector to "Radio" position.
 Set Balance, Treble and Bass controls to center. Maintain power supply voltage at 220 volts.
 Set Band selector to MW. **Note:** Control location is shown in fig. 22.

| SIGNAL GENERATOR COUPLING | STEP | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECTION | ADJUSTMENT | REMARKS |
|---|------|---------------------------------|---|--------------------------------------|--|--|
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1 | 460 kHz (30% Mod. with 400 Hz) | Point of non-interference (on/about 600 kHz). | Output meter across EXT SP jack (L). | T1101 T1102 T1103 | Adjust for maximum output. Repeat steps (2) and (3). |
| | 2 | 600 kHz (30% Mod. with 400 Hz) | 600 kHz | | L1105 (OSC coil) L1102 (ANTENNA coil) | |
| | 3 | 1400 kHz (30% Mod. with 400 Hz) | 1400 kHz | | L1111 (OSC trimmer) L1103 (ANTENNA trimmer) | |

Note: 1. Cement aerial coil with wax after completing alignment.
 2. Make certain that speaker or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

MW-ZF- & HF-ABGLEICH (Benötigte Geräte : Prüfgenerator; 4Ω Lautsprecher oder Blindwiderstand.)

Die Ausgangsleistung vom Prüfgenerator sollte nicht höher sein, als zur Erzielung einer Ausgangsanzeige nötig ist.
 Den Lautstärkereger in ganz aufdrehen.
 Die Regler für Balance, Höhen und Bässe mittig einstellen.
 Den Bandwahlschalter in die "MW"-Position stellen.
 Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio" -position stellen.
 Die Netzspannung auf 220 V konstant halten.

Anmerkung: Die Anordnung der Regler wird in Abb. 22 gezeigt.

| PRÜF-GENERATOR-ANKOPPELUNG | Schritt | PRÜF-GENERATOR-FREQUENZ | RADIO-SKALEN-EINSTELLUNG | ANSCHLUSS | ABSTIMMUNG | BEMERKUNGEN |
|---|---------|--------------------------------|--|---|---|--|
| Kippgenerator strahlt Ausgangssignal an Schleifenantenne aus. | 1 | 460 kHz (30% Mod. mit 400 Hz) | Störungsfreie Einstellung (auf/um 600 kHz) | Ausgangsmesser parallel an EXT SP Buchse. (Links) | T1101 T1102 T1103 | Auf maximalen Ausgang abstimmen. Schritte (2) und (3) wiederholen. |
| | 2 | 600 kHz (30% Mod. mit 400 Hz) | 600 kHz | | T1105 (Schwing-spule) L1102 (Antennen-spule) | |
| | 3 | 1400 kHz (30% Mod. mit 400 Hz) | 1400 kHz | | L1111 (Schwing-trimmer) L1103 (Antennen-trimmer) | |

Anmerkungen: 1. Die Antennenspule nach Beenden des Abgleichs mit Wachs verkleben.
 2. Sicherstellen, daß der Lautsprecher oder Blindwiderstand (8Ω) beim Abgleich an die EXT-SP-Buchse angeschlossen ist.

SW R-F ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.

Set Volume control to maximum.

Set Balance, Treble and Bass controls to center.

Set Band selector to SW.

Set TV/Radio/Tape /Line in selector to "Radio" position.

Maintain power supply voltage at 220 volts.

Note: Control location is shown in fig. 22.

| SIGNAL GENERATOR COUPLING | STEP | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECTION | ADJUSTMENT | REMARKS |
|---|------|---------------------------------|--------------------|--------------------------------------|--|----------------------------|
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1 | 6.0 MHz (30% Mod. with 400 Hz) | 6.0 MHz | Output meter across EXT SP jack (L). | L1106 (OSC coil) L1103 (ANTENNA coil) | Adjust for maximum output. |
| | 2 | 18.0 MHz (30% Mod. with 400 Hz) | 18.0 MHz | | C1 (OSC trimmer) C2 (ANTENNA trimmer) | |

Note: Make certain that speaker or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

KW-HF-ABGLEICH

Die Ausgangsleistung vom Prüfgenerator sollte nicht höher sein, als zur Erzielung einer Ausgangsanzeige nötig ist.

Den Lautstärkeregler ganz aufdrehen.

Die Regler für Balance, Höhen und Bässe mittig einstellen.

Den Bandwahlschalter in die "SW"-Position stellen.

Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio"-Position stellen.

Die Netzspannung auf 220 V konstant halten. **Anmerkung:** Die Anordnung der Regler wird in Abb. 22 gezeigt.

| PRÜF-GENERATOR-ANKOPPELUNG | Schritt | PRÜF-GENERATOR-FREQUENZ | RADIO-SKALEN-EINSTELLUNG | ANSCHLUSS | ABSTIMMUNG | BEMERKUNGEN |
|--|---------|--------------------------------|--------------------------|---|---|----------------------------------|
| Kippgenerator strahlt Ausgangssignal an Schleifenantenne aus | 1 | 6.0 MHz (30% Mod. mit 400 Hz) | 6.0MHz | Ausgangsmesser parallel an EXT SP Buchse. (Links) | L1106 (Schwing-spule) L1103 (Antennen-spule) | Auf maximalen Ausgang abstimmen. |
| | 2 | 18.0 MHz (30% Mod. mit 400 Hz) | 18.0MHz | | C1 (Schwing-trimmer) C2 (Antenne-trimmer) | |

Anmerkungen: Sicherstellen, daß der Lautsprecher oder Blindwiderstand (8Ω) beim Abgleich an die EXT-SP-Buchse angeschlossen ist.

LW R-F ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.

Set Volume control to maximum.

Set Balance, Treble and Bass controls to center.

Set Band selector to LW.

Set TV/Radio/Tape/Line in selector to "Radio" position.

Maintain power supply voltage at 220 volts.

Note: Control location is shown in fig. 22.

| SIGNAL GENERATOR COUPLING | STEP | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECTION | ADJUSTMENT | REMARKS |
|---|------|--------------------------------|--------------------|--------------------------------------|--|---|
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1 | 145 kHz (30% Mod. with 400 Hz) | 145 kHz | Output meter across EXT SP jack (L). | L1104 (OSC coil) L1102 (ANTENNA coil) | Adjust for maximum output by sliding coil (L1006) along ferrite core. |
| | 2 | 285 kHz (30% Mod. with 400 Hz) | 285 kHz | | C1110 (OSC trimmer) C1102 (ANTENNA trimmer) | Adjust for maximum output Repeat step (1). |

Note: 1. Cement aerial coil with wax after completing alignment.

2. Make certain that speaker or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

KW-HF-ABGLEICH

Die Ausgangsleistung vom Prüfgenerator sollte nicht höher sein, als zur Erzielung einer Ausgangsanzeige nötig ist.

Den Lautstärkeregler ganz aufdrehen.

Die Regler für Balance, Höhen und Bässe mittig einstellen.

Den Bandwahlschalter in die "LW"-Position stellen.

Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio"-Position stellen.

Die Netzspannung auf 220 V konstant halten. **Anmerkung:** Die Anordnung der Regler wird in Abb. 34 gezeigt.

| PRÜF-GENERATOR-ANKOPPELUNG | Schritt | PRÜF-GENERATOR-FREQUENZ | RADIO-SKALEN-EINSTELLUNG | ANSCHLUSS | ABSTIMMUNG | BEMERKUNGEN |
|--|---------|------------------------------|--------------------------|---|--|--|
| Kippgenerator strahlt Ausgangssignal an Schleifenantenne aus | 1 | 145KHz (30% Mod. mit 400 Hz) | 145kHz | Ausgangsmesser parallel an EXT SP Buchse. (Links) | L1104 (Schwing-spule) L1102 (Antennen-spule) | Durch Verschieben der Spule (L1006) entlang des Ferritkerns auf maximalen Ausgang abstimmen. |
| | 2 | 285KHz (30% Mod. mit 400 Hz) | 285KHz | | C1110 (Schwing-trimmer) C1102 (Antenne-trimmer) | Auf maximalen Ausgang abstimmen Schritte(1) wiederholen. |

Anmerkungen: 1. Die Antennenspule nach Beenden des Abgleichs mit Wachs verkleben.

2. Sicherstellen, daß der Lautsprecher oder Blindwiderstand (8Ω) beim Abgleich an die EXT-SP-Buchse angeschlossen ist.

FM I-F ALIGNMENT

EQUIPMENT REQUIRED

Signal generator that provides 10.7 MHz marker.
Sweep generator that provides 10.7 MHz and 400 kHz sweep width.

OSCILLOSCOPE

Set sweep selector of oscilloscope to EXTERNAL SWEEP.
Apply 50 Hz sweep signal from sweep generator to horizontal input terminals of oscilloscope.
Set Volume control to maximum.
Set Balance, Treble and Bass controls to center.
Set TV/Radio/Tape/Line in selector to "Radio" position. Maintain power supply voltage at 220 volts.
Set Band selector to FM. **Note:** Control location is shown in fig. 22.

| SIGNAL GENERATOR COUPLING | STEP | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECTION | ADJUSTMENT | REMARKS |
|--|------|--------------------------------|--|---|----------------|--|
| Connect to TP102 through FM DUMMY (See Fig. 20) Common to chassis. | 1 | 10.7 MHz (30% Mod. with 400Hz) | Point of non-interference. (On/about 90 MHz) | Connect vert. amp. of scope to TP104 Common to chassis. | T1001 T1002 | Adjust for maximum amplitude and proper linearity. (See fig. 18) |
| | 2 | | | | T1003 | To obtain proper linearity. (See fig. 19) |

Note: Make certain that speaker or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

UKW-ZF-ABGLEICH

BENÖTIGTE GERÄTE

Prüfgenerator, der 10.7MHz-Markierer aufweist.
Kippgenerator, der 10.7MHz und 400kHz Kippbreite aufweist.

OSZILLOGRAPH

Den Kipp-Wahlschalter am Oszillograph auf EXTERNAL SWEEP einstellen.
50Hz-Kippsignal vom Kippgenerator den horizontalen Eingangsanschlüsse des Oszillograph zuleiten.
Den Lautstärkeregler ganz zurückdrehen.
Die Regler für Balance, Höhen und Bässe mittig einstellen.
Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio"-Position stellen.
Den Bandwahlschalter auf FM stellen.
Die Netzspannung auf 220 V konstant halten. **Anmerkung:** Die Anordnung der Regler wird in Abb. 22 gezeigt.

| KIPP-GENERATOR-ANKOPPELUNG | Schritt | PRÜF-GENERATOR-FREQUENZ | RADIO-SKALEN-EINSTELLUNG | ANSCHLUSS | ABSTIMMUNG | BEMERKUNGEN |
|--|---------|--------------------------------|--|---|----------------|---|
| Über UKW-Ersatzantenne an TP102 anschließen (siehe Abb.20). Anschluß an Chassisierung. | 1 | 10.7 MHz (30% Mod. mit 400 Hz) | Störungsfreie Einstellung. (um/abg 90 MHz) | Vert. Verst. des Oszillograph an TP104, —Anschluß an Chassisierung. | T1001 T1002 | Auf maximale Amplitude und saubere Linariät abstimmen. (Siehe Abb. 18.) |
| | 2 | | | | T1003 | Zur Erzielung sauberer Linearität (Siehe. Abb. 19.) |

Anmerkungen: Sicherstellen, daß der Lautsprecher oder Blindwiderstand (8Ω) beim Abgleich an die EXT-SP-Buchse angeschlossen ist.

FM R-F ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.

Set Volume control to maximum.

Set Balance, Treble and Bass controls to center.

Set TV/Radio/Tape/Line in selector to "Radio" position.

Set Band selector to FM.

Maintain power supply voltage at 220 volts.

Note: Control location is shown in fig. 22.

| SIGNAL GENERATOR COUPLING | STEP | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECTION | ADJUSTMENT | REMARKS |
|--|------|--------------------------------|--------------------|--------------------------------------|--|--|
| Connect to EXT FM antenna terminal through FM DUMMY ANTENNA (See fig. 21) Common to chassis. | 1 | 90 MHz (30% Mod. with 400 Hz) | 90 MHz | Output meter across EXT SP jack (L). | L1002 (FM OSC coil) L1001 (FM Collector coil) | Adjust for maximum output. |
| | 2 | 106 MHz (30% Mod. with 400 Hz) | 106 MHz | | FC1 (FM OSC trimmer) FC2 (FM collector trimmer) | Adjust for maximum output. Repeat steps (1) and (2). |

Note: Make certain that speaker or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

UKW-HF-ABGLEICH

Die Ausgangsleistung vom Prüfgenerator sollten nicht höher sein, als zur Erzielung einer Ausgangsanzeige nötig ist.

Den Lautstärkereger ganz aufdrehen.

Die Netzspannung auf 220 V konstant halten.

Die Regler für Balance, Höhen und Bässe mittig einstellen.

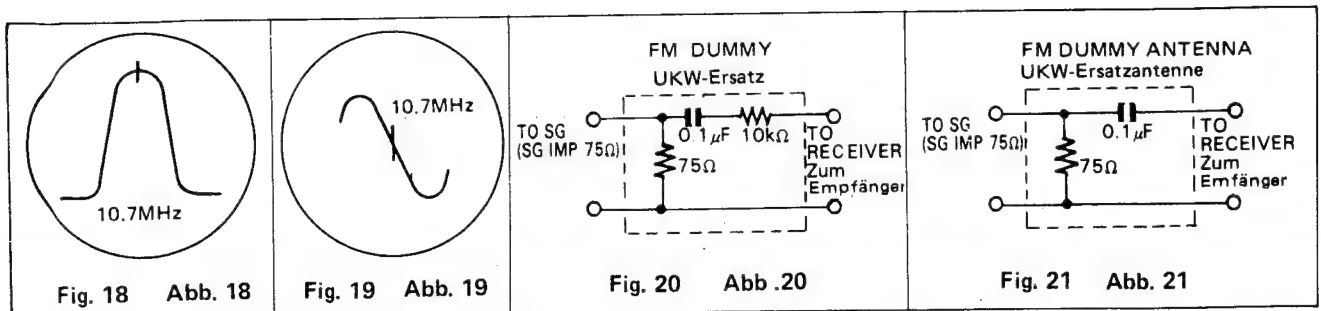
Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio"-Position stellen.

Den Bandwahlschalter auf "FM" stellen.

Anmerkung: Die Anordnung der Regler wird in Abb. 22 gezeigt.

| PRÜF-GENERATOR-ANKOPPELUNG | Schritt | PRÜF-GENERATOR-FREQUENZ | RADIO-SKALEN-EINSTELLUNG | ANSCHLUSS | ABSTIMMUNG | BEMERKUNGEN |
|--|---------|-------------------------------|--------------------------|---|--|--|
| EXT UKW-Antennenanschluß über UKW-Ersatzantenne anschließen (Siehe Abb. 21.) —Anschluß an Chassisierung. | 1 | 90 MHz (30% Mod. mit 400 Hz) | 90MHz | Ausgangsmesser parallel an EXT-SP Buchse. (Links) | L1002 (FM UKW-Schwing spule) L1001 (UKW-Kollektorspule) | Auf maximalen Ausgang abstimmen. |
| | 2 | 106 MHz (30% Mod. mit 400 Hz) | 106MHz | | FC1 (UKW-Schwing-trimmer) FC2 (UKW-Kollektor trimmer) | Auf maximalen Ausgang abstimmen. Schritte (1) und (2) wiederholen. |

Anmerkungen: Sicerstellen, daß der Lautsprecher oder Blindwiderstand (8Ω) beim Abgleich an die EXT-SP-Buchse angeschlossen ist.



FM Stereo Alignment

Output of signal generator should be no higher than necessary to obtain an output reading.
Set Volume control to Maximum.
Set Balance, Treble and Bass controls to center position.
Set TV/Radio/Tape/Line in selector to "Radio" position. Maintain power supply voltage at 220 volts.
Set Band selector to FM. Note: Control location as shown in Fig.22.

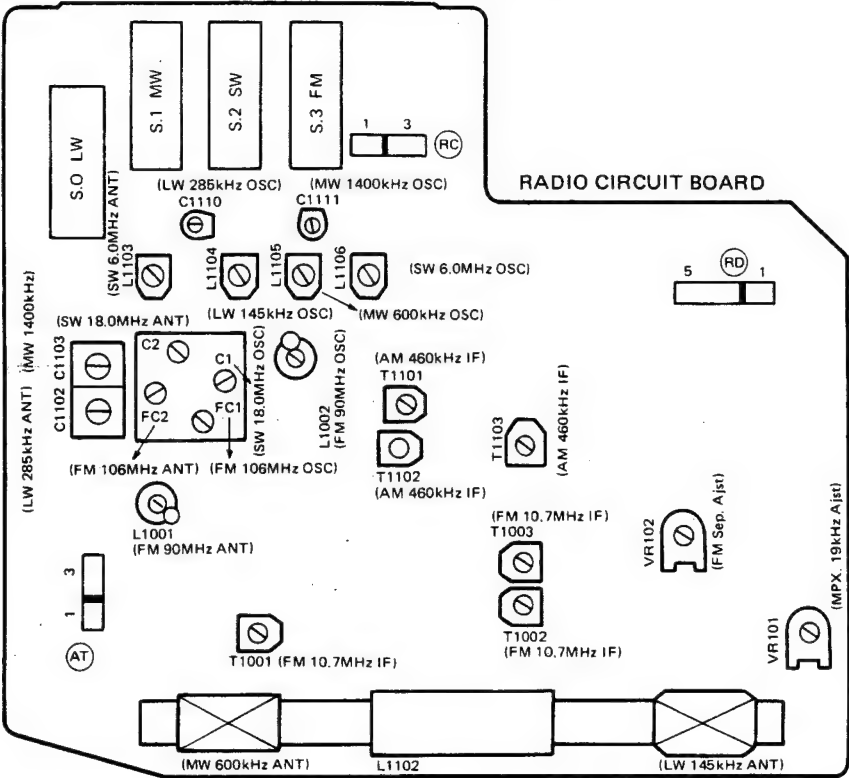
| EQUIPMENT CONNECTION | ADJUSTMENT | REMARKS |
|--|------------|--|
| Connect frequency counter to TP 103 and chassis ground | VR 101 | Adjust for 19 ± 0.1 KHz on frequency counter reading |

SEPARATION ALIGNMENT

Control position:
1. Stereo modulation: Connect stereo modulator to EXT. mod. terminal of signal
2. Signal Generator: Modulation rate of 19 KHz pilot signal 10%
Modulation rate of Left and Right signal 27%
Output level 80dB
3. Balance control: Adjust balance control so that output level from both channels becomes equal.

| EQUIPMENT CONNECTION | | ADJUSTMENT | REMARKS |
|--|---|----------------------------|---|
| SIGNAL GENERATOR | OSCILLOSCOPE | | |
| Connect to EXT. FM antenna terminal through FM DUMMY ANTENNA (See Fig. 21) Common to chassis | Connect vertical (Separation amp input of scope control) to RC terminal No. 1 and No. 2. Common to chassis. | VR102 (Separation control) | Set function switch of stereo modulator to "L" (left) position. Adjust VR 102 to obtain the Minimum "R" (right) output Set function switch of stereo modulator to "R" (Right) position. Adjust VR 102 to obtain the minimum "L" (Left) output. |

Note: When alignment separation, disconnect frequency counter.



UKW-Stereo-Abgleich

Der Ausgang des Meßsenders sollte nicht höher sein, als für eine Ausgangsanzeige erforderlich ist.

Den Lautstärkeregler ganz aufdrehen.

Die Regler für Balance, Höhen und Bässe mittig einstellen.

Den TV/Radio/Tonband/Direkteingang-Wahlschalter in die "Radio"-Position stellen.

Den Wellenbereichswähler auf "FM" einstellen.

Die Netzspannung auf 220 V konstant halten.

Anmerkung: Die Lage der Regler ist aus Abb. 22 ersichtlich.

| GERÄTEANSCHLUSS | EINSTELLUNG | BEMERKUNGEN |
|---|-------------|---|
| Frequenzzähler an TP103 und Chassismasse anschließen. | VR101 | Auf eine Frequenzzähleranzeige von 19 ± 0.1 kHz einstellen. |

TRENNUNGS-ABGLEICH

Reglerstellungen:

1. Stereo-Modulator: Stereo-Modulator an die EXT.-Modulationssignalklemme anschließen.
2. Meßsender:
 - Modulationsgrad des 19 kHz-Pilot-signals 10%
 - Modulationsgrad des Signals für den rechten und linken Kanal 27%
 - Ausgangspegel 80 dB
3. Balanceregler: Den Balanceregler so einstellen, daß der Ausgangspegel beider Kanäle gleich wird.

| GERÄTEANSCHLUSS | | EIN- STELLUNG | BEMERKUNGEN |
|---|--|-----------------------------|---|
| MESSENDER | OSZILLOGRAPH | | |
| Über eine künstliche UKW-Antenne an die Antennenklemme EXT.FM anschließen. (Siehe Abb. 21.) An das Chassis erden. | Vertikal (Trennungsverstärkereingang des Oszillograph-reglers) an die RC-Klemme Nr. 1 und Nr. 2 anschließen. An das Chassis erden. | VR102 (Trennungs-regler) | Funktionsschalter des Stereo-Modulators auf die Stellung "L" (linker Kanal) einstellen. VR102 auf minimalen "R"-Ausgang (rechter Kanal) einstellen. Funktionschalter des Stereo-Modulators auf die Stellung "R" (rechter Kanal) einstellen. VR102 auf minimalen "L"-Ausgang (linker Kanal) einstellen. |

Anmerkung: Beim Trennungs-Abgleich den Frequenzzähler trennen.

CASSETTE TAPE RECORDER—KASSETTENBANDGERAT-ABGLEICH ALIGNMENT

TRAP COIL ALIGNMENT

Preparation

1. Set up Oscilloscope and DC power supply as shown in Fig. 23.

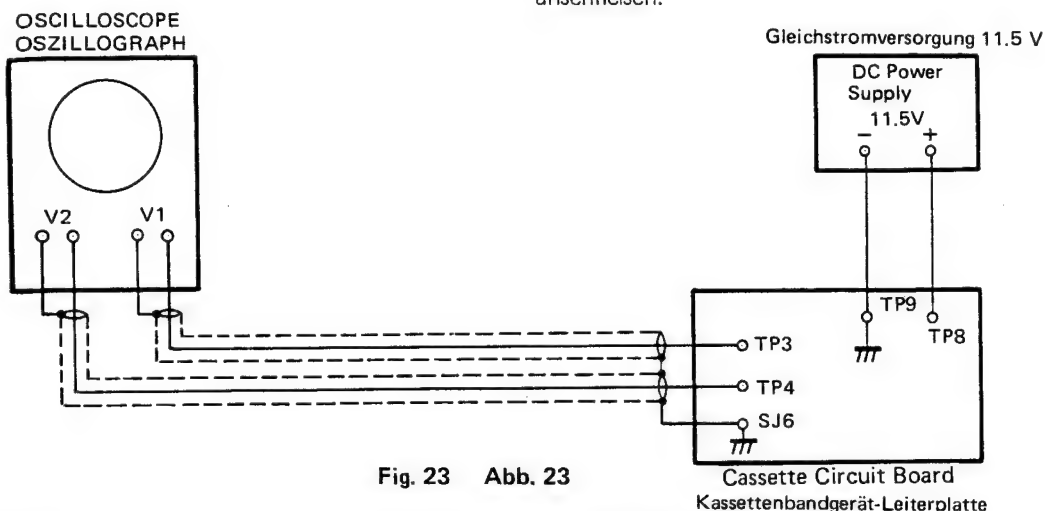


Fig. 23 Abb. 23

Alignment Procedure

1. Set VR141 and VR151 to center position.
2. Set tape recorder to recording mode.
3. Adjust L1401 and L1501 to obtain minimum level.

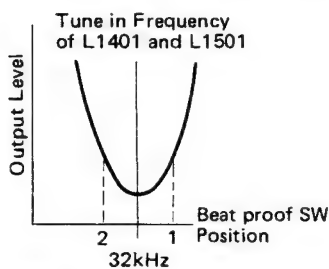
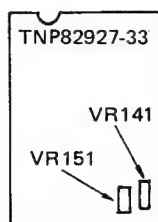


Fig. 24 Abb. 24

BIAS ALIGNMENT

Preparation

1. Set up Voltmeter and DC power supply as shown in Fig. 25.

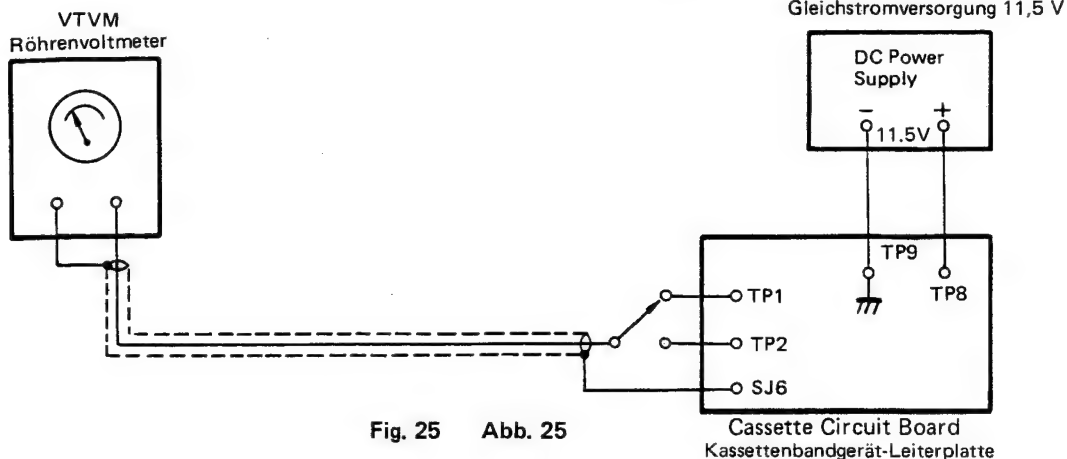


Fig. 25 Abb. 25

SPERRSPULEN-ABGLEICH

Vorbereitung

1. Oszillograph und Gleichstromversorgung gemäß Abb. 23 anschließen.

Abgleichvorgang

1. VR141 und VR151 mittig einstellen.
2. Kassettenbandgerät auf Aufnahme einstellen.
3. L1401 und L1501 auf minimalen Pegel einstellen.

Vorbereitung

1. Röhrenvoltmeter und Gleichstromversorgung gemäß Abb. 25 anschließen.

Alignment Procedure

1. Adjust VR141 and VR151 to obtain the voltage of $+2.7\text{mV} \pm 0.2\text{mV}$. Set beat proof SW 102 at position 2.
2. Readjust VR141 and VR151 to obtain the voltage of $+2.8\text{mV} \pm 0.3\text{mV}$ with SW102 at position 1.

Note: Trap coil alignment and Bias alignment interact with one another.
Repeat alignment several times to confirm correct trap coil and bias alignment.

Abgleichvorgang

1. VR141 und VR151 auf die Spannung von $+2.7\text{mV} \pm 0.2\text{mV}$ einstellen.
Den Störunterdrückungsschalter SW 102 auf die Stellung 2 einstellen.
2. VR141 und VR151 bei auf Stellung 1 eingestelltem SW102 auf die Spannung von $+2.8\text{mV} \pm 0.3\text{mV}$ einstellen.

Anmerkung: Der Abgleich der Sperrspule steht mit demjenigen der Vorspannung in Wechselwirkung.
Den Abgleichvorgang mehrmals wiederholen, um einen einwandfreien Sperrspulen- und Vorspannungsabgleich sicherzustellen.

Preparation

1. Set up Oscilloscope and DC supply as shown in Fig. 26.

Vorbereitung

1. Oszillograph und Gleichstromversorgung gemäß Abb. 26 anschließen.

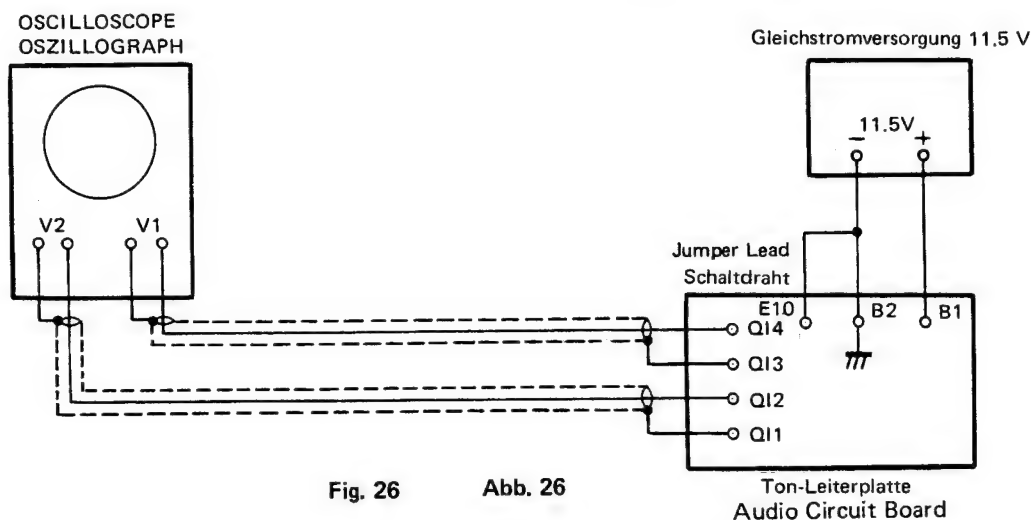


Fig. 26

Abb. 26

Alignment Procedure

1. Play azimuth tape.
2. Adjust record/playback head angle adjustment-screw (A) as shown in Fig. 27 which output level and phase from both channels becomes equal.
3. Fix adjustment lock head adjustment screw with lacquer.

Abgleichvorgang

1. Ein Azimutband abspielen.
2. Die Aufnahme-/Wiedergabekopfwinkel-Einstellschraube A gemäß Abb. 27 so einstellen, daß Ausgangspegel und Phase beider Kanäle gleich werden.
3. Die erwähnte Einstellschraube mit Lack sichern.

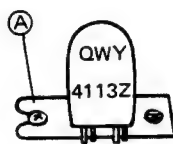


Fig. 27

Abb. 27

—LED METER ALIGNMENT— LEUCHTDIODENANZEIGE-ABGLEICH

LED METER ALIGNMENT

Preparation

1. Set up Signal Generator as shown in Fig. 28.
Maintain power supply voltage at 220 volts.

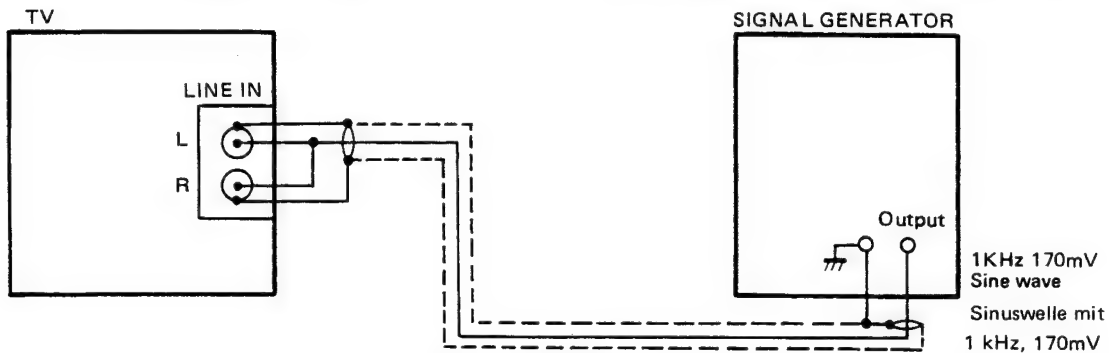


Fig. 28

Abb. 28

Alignment Procedure

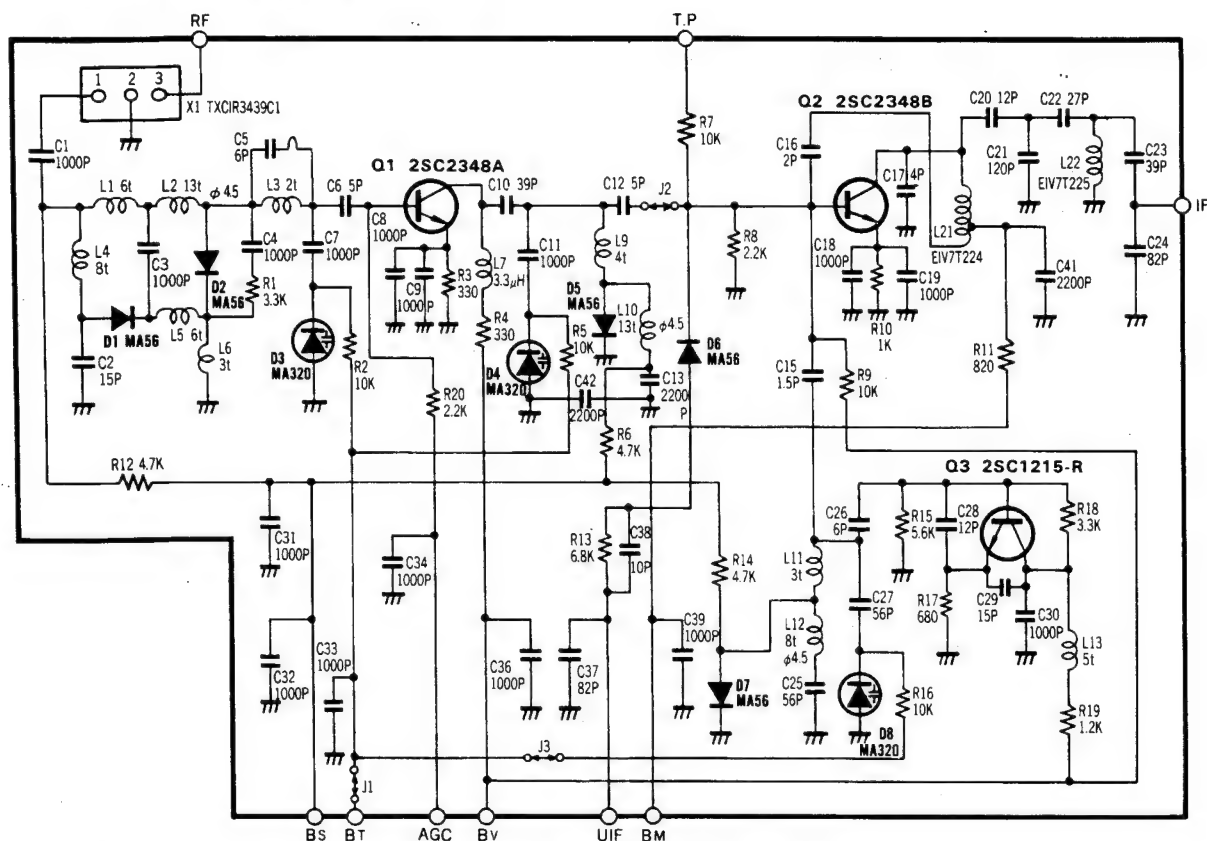
1. Set the LED Meter sw (SW301) ON position.
2. Set the TV/Radio/Tape/Line in selector "LINE-IN" position.
3. Adjust VR 301 to obtain light the 5th. LED meter from left side.
4. Adjust VR 302 to obtain light the 5th. LED meter from right side.

Abgleichvorgang

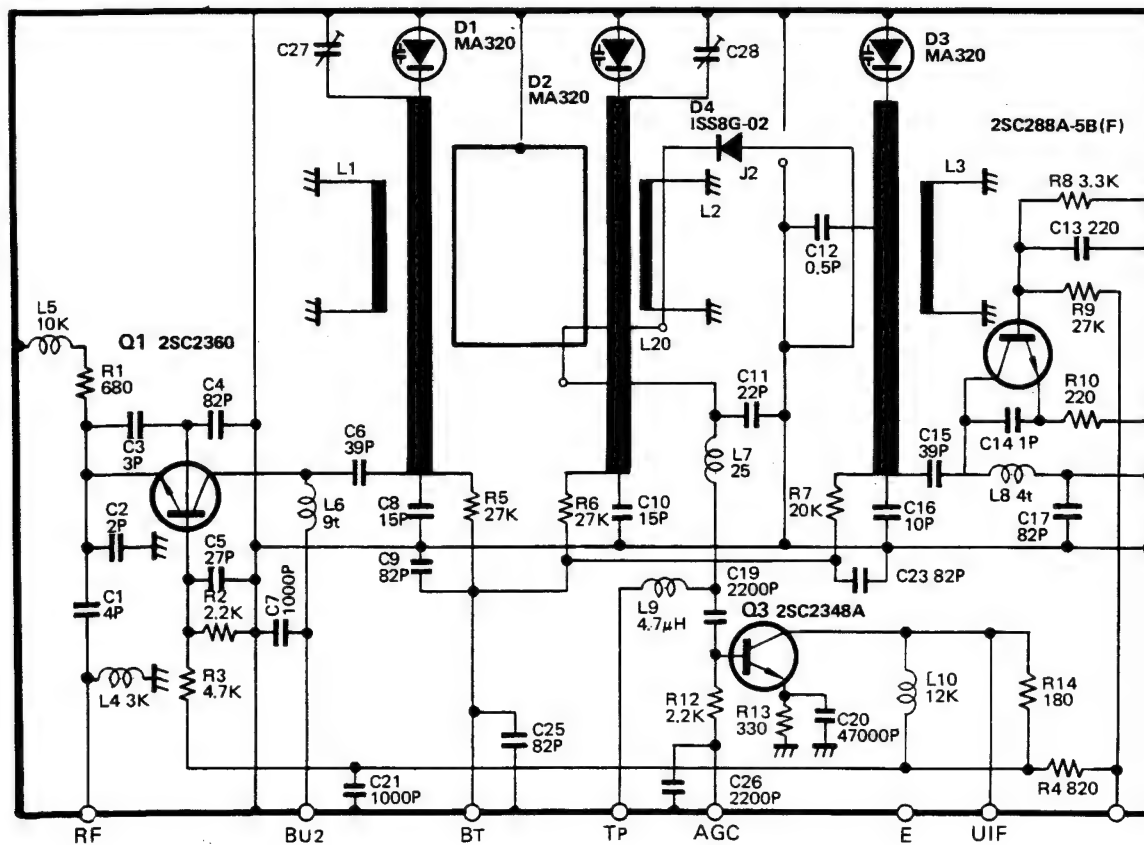
1. Den Leuchtdiodenanzeigeschalter (SW301) auf die Stellung "ON" einstellen.
2. Den TV/Radio/Tonband/Direkteingang-Wahlschalter auf die Stellung "LINE-IN" einstellen.
3. VR301 so einstellen, daß die 5. Leuchtdiode von links aufleuchtet.
4. VR302 so einstellen, daß die 5. Leuchtdiode von rechts aufleuchtet.

MEMO

VHF TUNER TNV17903F1F



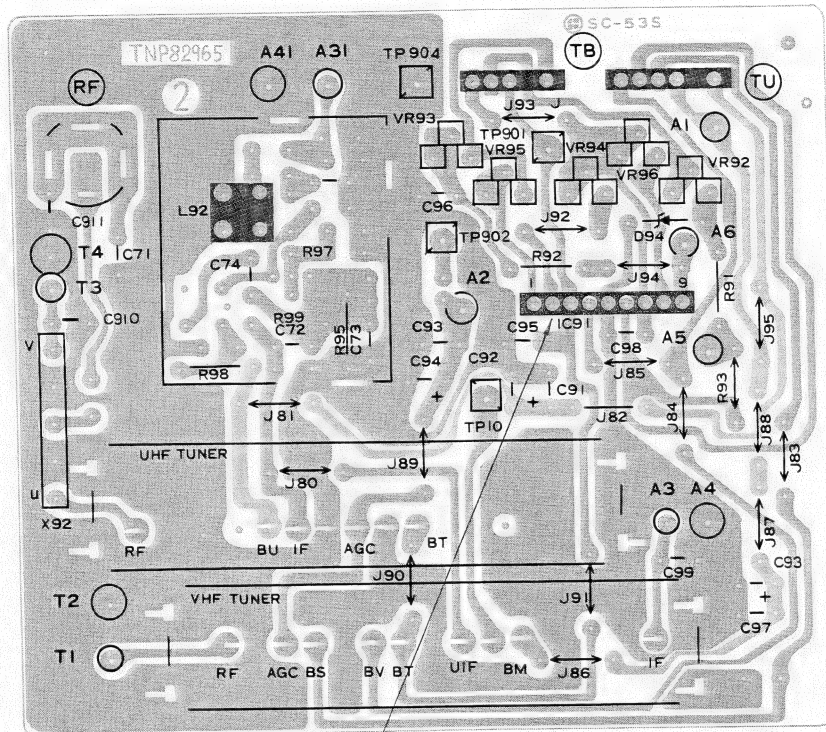
UHF TUNER TNV87902F1F



CONDUCTOR VIEW

TUNER CIRCUIT BOARD

TNP82965-31



IC91 Terminal Voltage

| TV Band | Terminal No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------|--------------|----|------|---|-----|---|------|------|-----|----|
| VL | | 31 | 13.5 | | 5.4 | 0 | -5.3 | 13.5 | 31 | 32 |
| VH | | 31 | 0.3 | | 5.4 | 0 | 4.5 | 0.8 | 0.8 | 32 |
| U | | 20 | 6.4 | | 0.2 | 0 | -5.3 | 6.4 | 6.3 | 32 |

IC91 Terminal 3

| Channel | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| VHF | 1.8 | 5.3 | 9.3 | 3.6 | 4.5 | 5.6 | 6.8 | 8.2 | 9.9 | 11.9 | 15.9 |
| Channel | 21 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 69 |
| UHF | 0.8 | 2.1 | 3.6 | 5.5 | 6.4 | 8.5 | 9.9 | 11.4 | 13.1 | 15.2 | 17.4 |

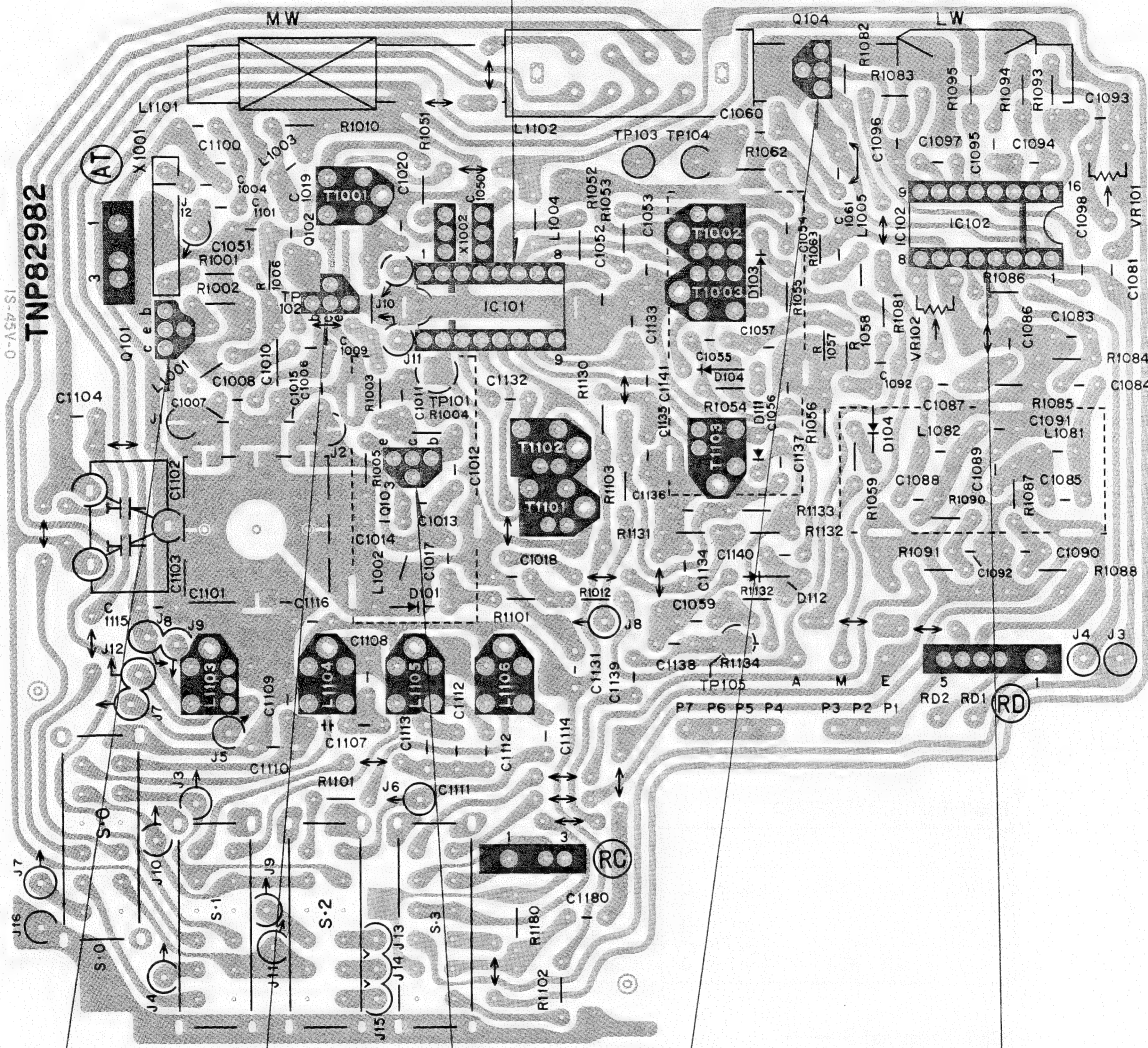
CONDUCTOR VIEW

RADIO CIRCUIT BOARD

TNP82982-31H

IC101

| Pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------|------|------|----|------|------|------|------|------|----|------|------|------|------|------|------|------|
| AM | 4.8V | 0V | 0V | 0V | 0V | 0V | 0V | 0V | 0V | 0.7V | 4.8V | 4.8V | 0.7V | 0.7V | 4.8V | 0.7V |
| FM | 0V | 0.7V | 0V | 2.8V | 3.5V | 4.6V | 4.5V | 3.4V | 0V | 0V | 0V | 0V | 0V | 0V | 0V | 0V |



| Q101 | |
|------|-------|
| C | 3.2V |
| B | 0.8V |
| E | 0.04V |

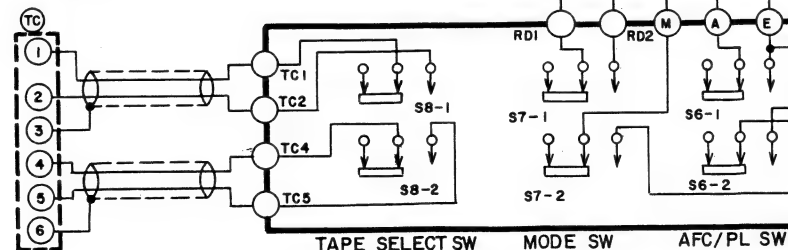
| Q102 | |
|------|------|
| C | 2.5V |
| B | 0.7V |
| E | 0V |

| Q103 | |
|------|------|
| C | 4.5V |
| B | 1.3V |
| E | 0.5V |

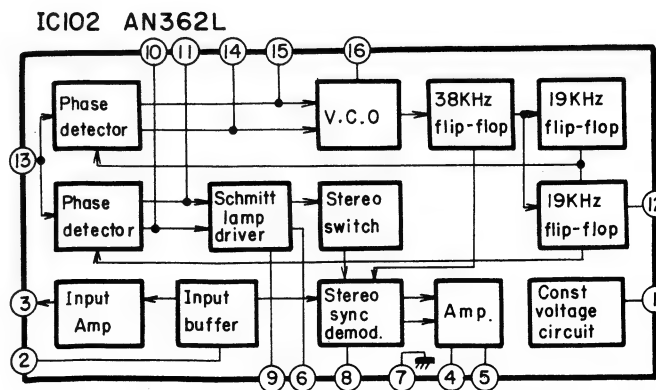
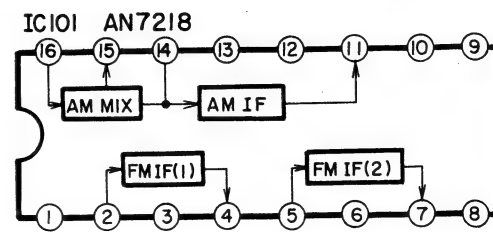
| Q104 | | |
|------|-------|-------|
| | AM | FM |
| C | 0.03V | 0.06V |
| B | 0V | 0.6V |
| E | 0V | 0V |

| IC102 | | | |
|-------|-------|----|-------|
| 1 | 11.8V | 9 | 0.06V |
| 2 | 3.4V | 10 | 1.7V |
| 3 | 3.1V | 11 | 1.7V |
| 4 | 3.9V | 12 | 1.4V |
| 5 | 3.8V | 13 | 1.7V |
| 6 | 10.2V | 14 | 1.7V |
| 7 | 0V | 15 | 1.7V |
| 8 | 0.2V | 16 | 2.6V |

S5 S4 S3 S2 S1 S0
VHF UHF FM SW MW LW

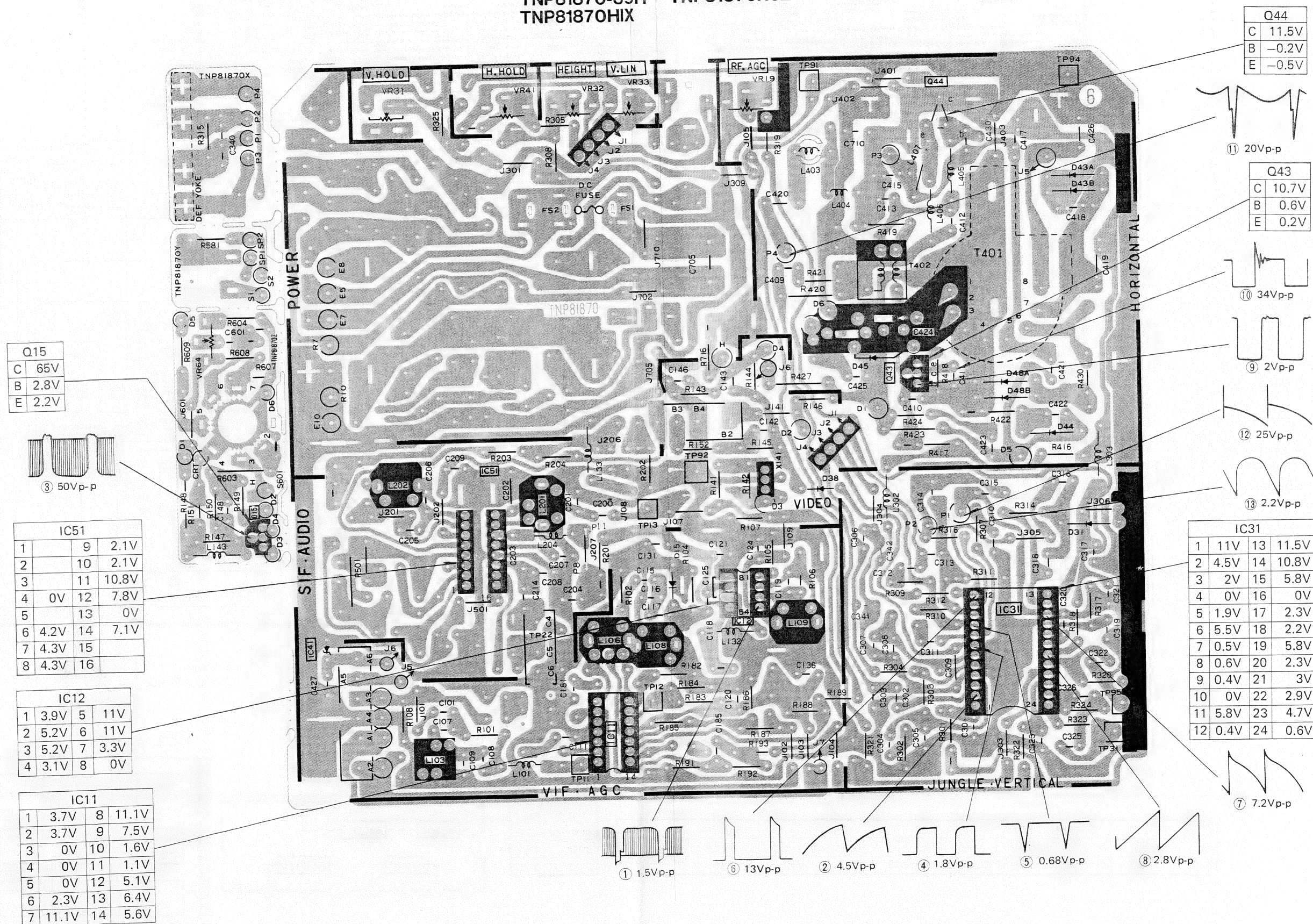
[illegible]

| | A M | FM |
|---|-------|-------|
| C | 0.03V | 0.06V |
| B | 0 V | 0.6 V |
| E | 0 V | 0 V |

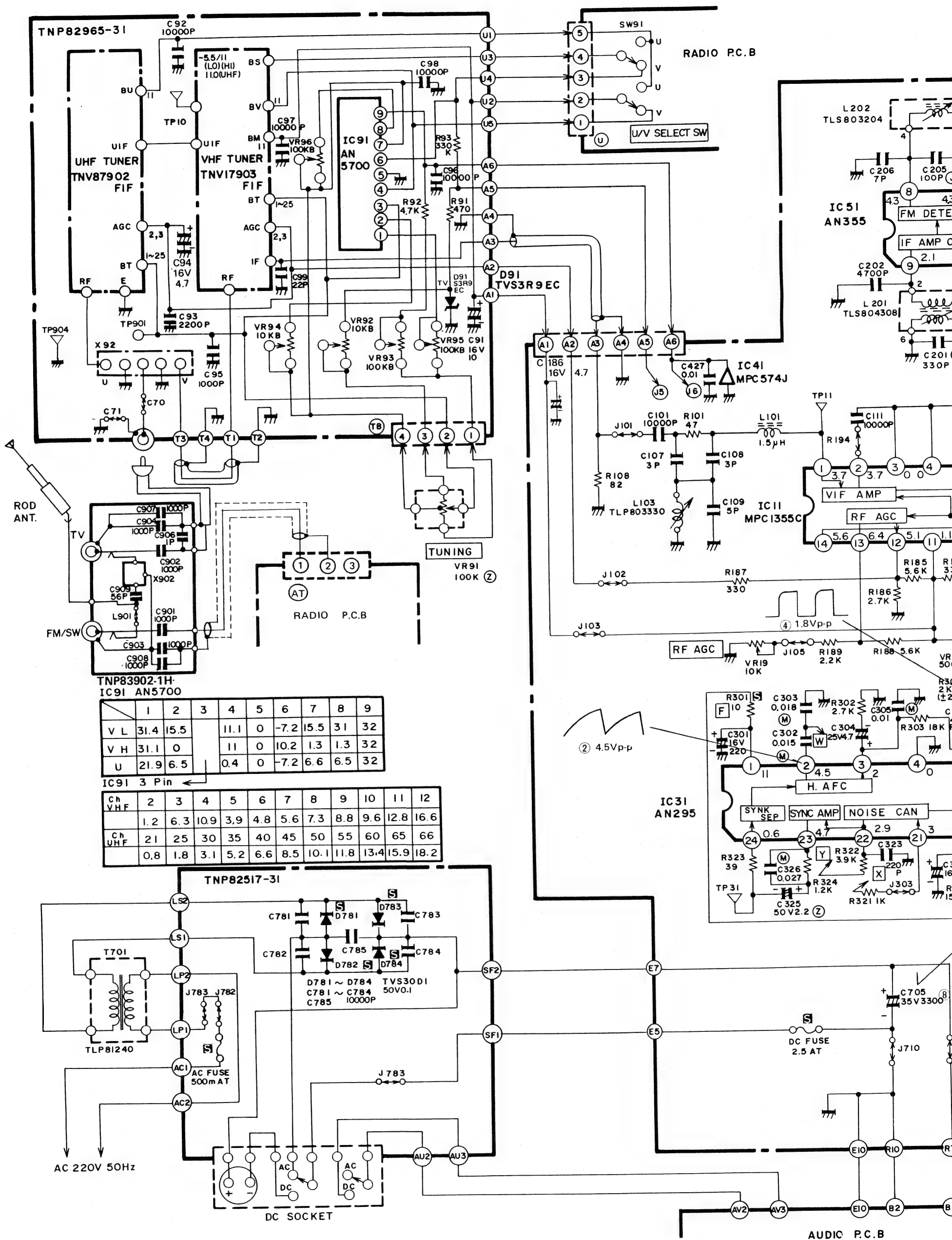


CONDUCTOR VIEWS

MAIN CIRCUIT BOARD
TNP81870-39H TNP81870H3Z
TNP81870HIX




SCHEMATIC DIAGRAM FOR M



NOTE

- ## 1. RESISTOR

All resistors are carbon 1/4W resistor, unless otherwise noted the following marks.
Unit of resistance is OHM (Ω), (K= 1,000, M= 1,000,000)

| | | | |
|---|-----------------------|---|------------------------|
| | : Solid resistor | | : Metal oxide resistor |
| | : Wire wound resistor | | : Thermistor |
|  | : Fuse resistor | | |

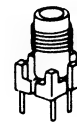
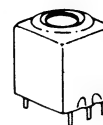
- ## 2. CAPACITOR

All capacitors are ceramic 50V capacitor, unless otherwise noted.
Unit of capacitance is μF , unless otherwise noted.

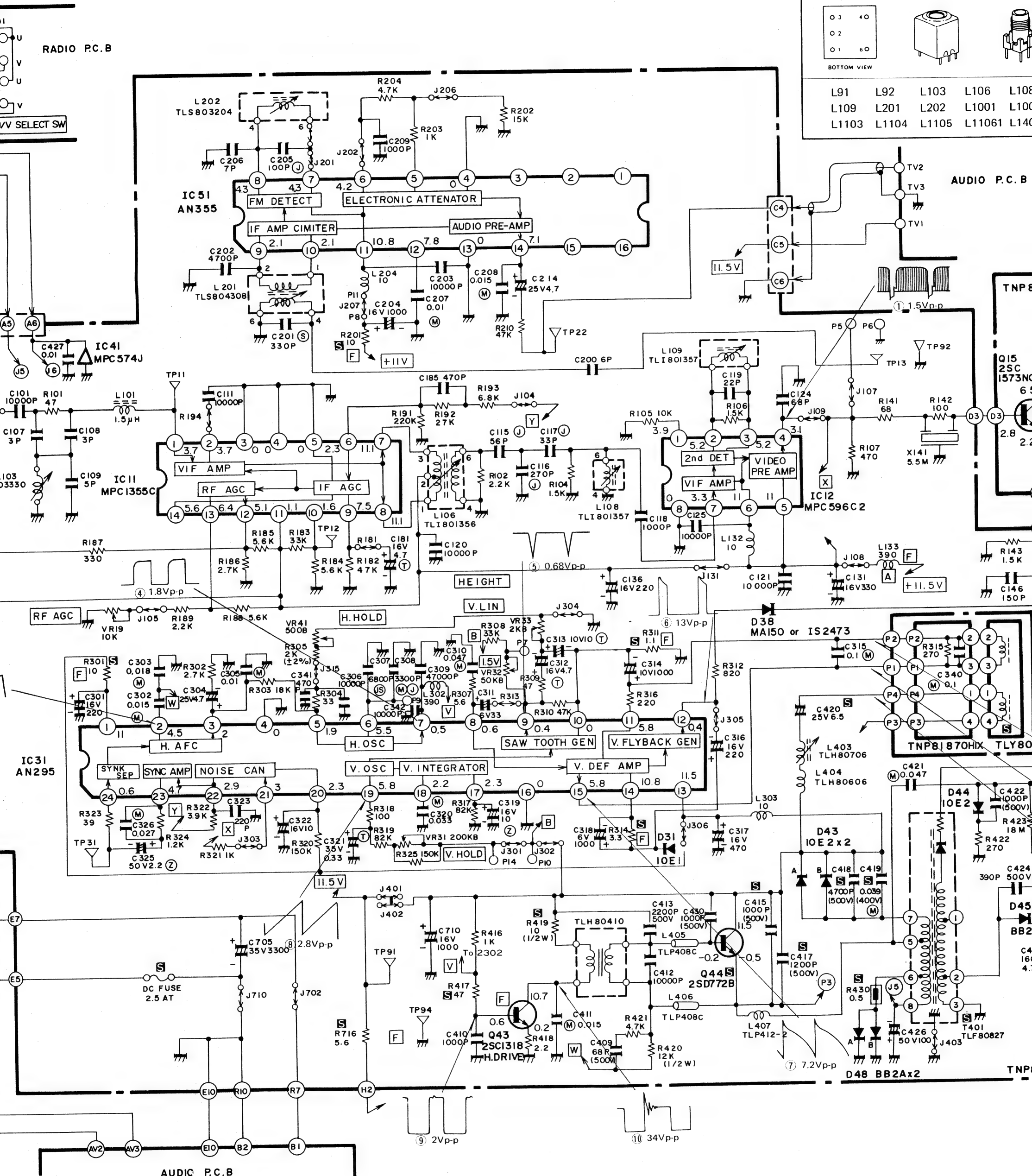
(M) : Polyester capacitor S : Polystyrene capacitor
 +H- : Electrolytic capacitor

| | |
|-----|-----|
| 0 3 | 4 0 |
| 0 2 | |
| 0 1 | 6 0 |

BOTTOM VIEW



| | | | | |
|-------|-------|-------|--------|------|
| L91 | L92 | L103 | L106 | L108 |
| L109 | L201 | L202 | L1001 | L100 |
| L1103 | L1104 | L1105 | L11061 | L140 |



All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.

Unit of capacitance is μF , unless otherwise noted.

(M) : Polyester capacitor S : Polystyrene capacitor

⊥ : Electrolytic capacitor

Unit of inductance is μH .

⏏ : Test point position

Voltage is measured by a volt ohm meter with DC 500K OHM/V receiving normal signal, when all controls are set to the maximum position.

6. Number in red circle indicates waveform number.

7. When arrow mark (\nearrow) is found, connection is as shown in the arrow.

8. When schematic diagram of a board is described with dotted line (---).

9. This schematic diagram is the latest at the time of printing.

L TR-1200S (CHASSIS NO. 12B01-E)

TRANSFORMER TERMINAL INFORMATION

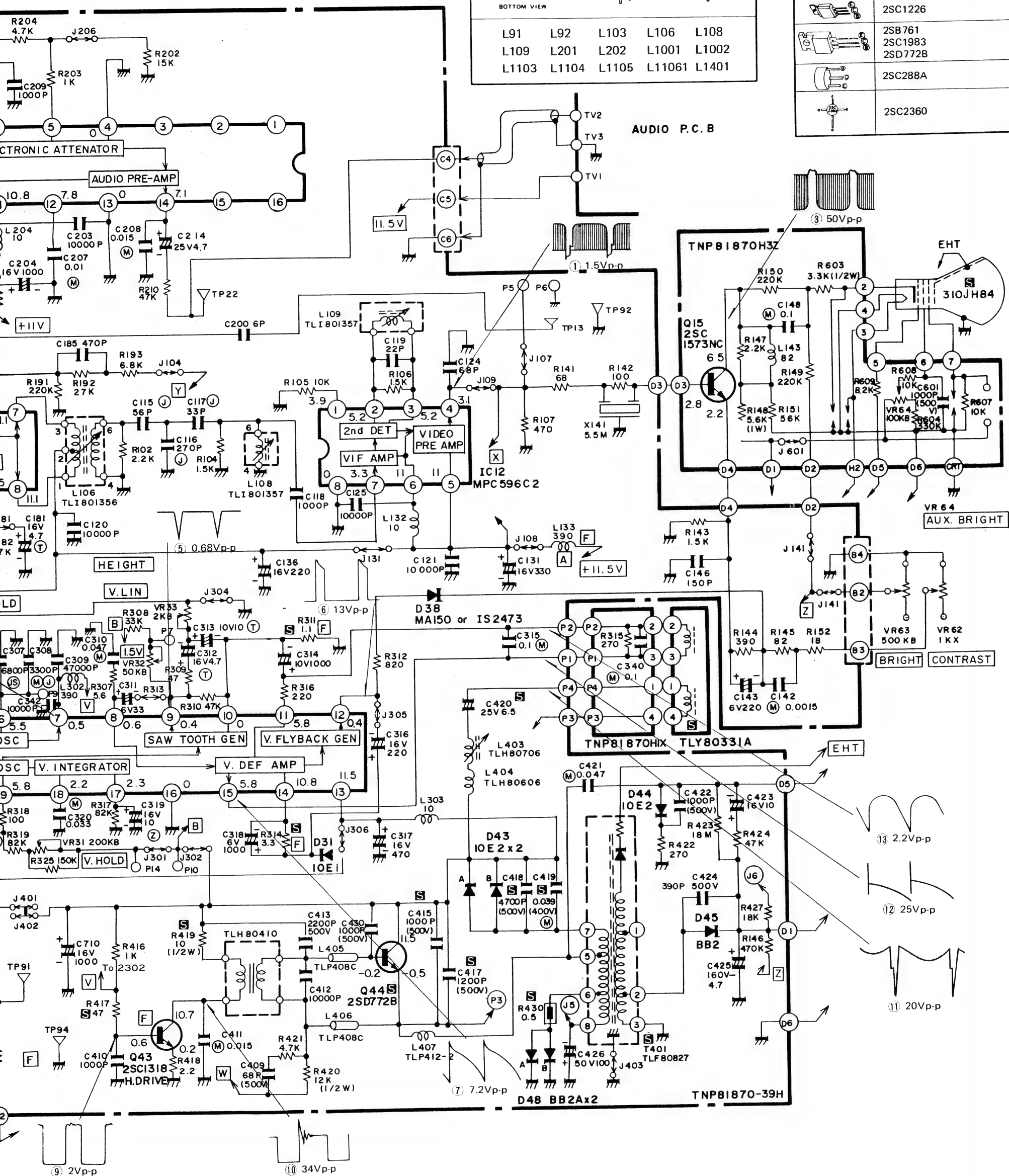
| | |
|-----|-----|
| 0 3 | 4 0 |
| 0 2 | |
| 0 1 | 6 0 |

BOTTOM VIEW

| | | | | |
|-------|-------|-------|--------|-------|
| L91 | L92 | L103 | L106 | L108 |
| L109 | L201 | L202 | L1001 | L1002 |
| L1103 | L1104 | L1105 | L11061 | L1401 |

TRANSISTOR BASE INFORMATION

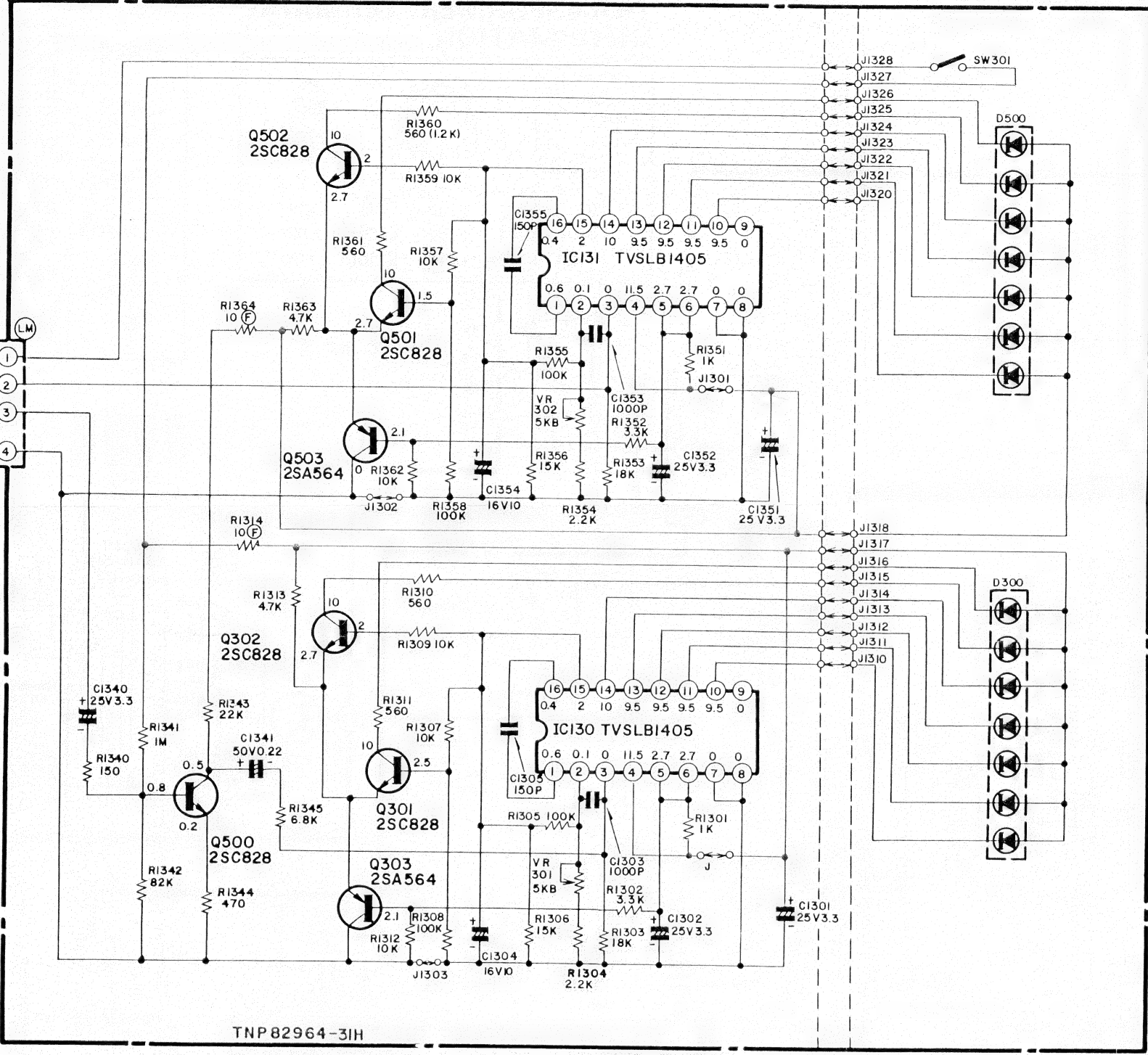
| | |
|-----------|-----------|
| 2SA564 | 2SC1318 |
| 2SB621ANC | 2SC1359 |
| 2SC644 | 2SC1383 |
| 2SC828 | 2SC1573NC |
| 2SC1686 | |
| 2SC1687 | |
| 2SC2348A | |
| 2SC1226 | |
| 2SB761 | |
| 2SC1983 | |
| 2SD772B | |
| 2SC288A | |
| 2SC2360 | |



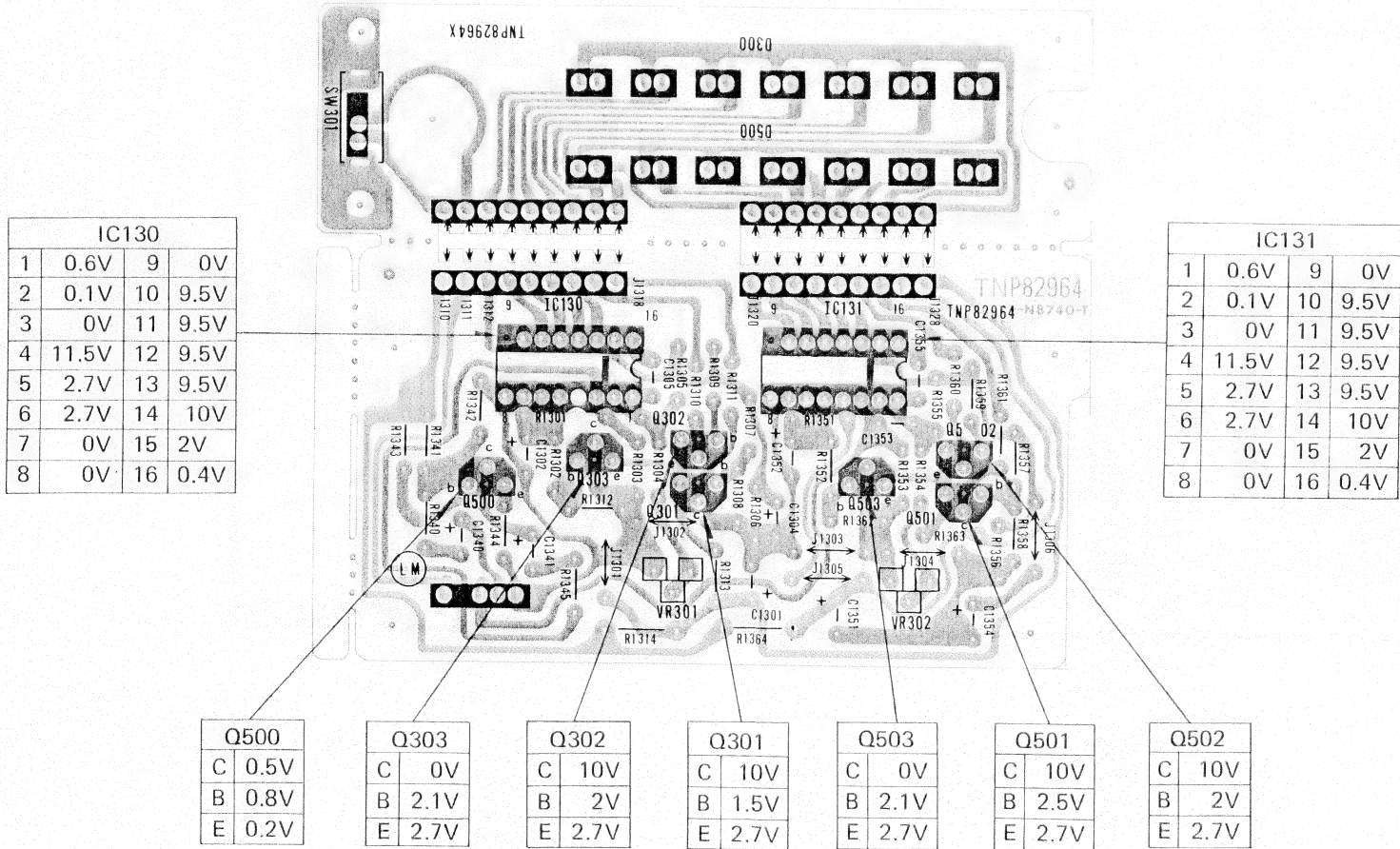
- COIL
Unit of inductance is μH .
- TEST POINT
: Test point position
- VOLTAGE MEASUREMENT
Voltage is measured by a volt ohm meter with DC 500K OHM/V receiving normal signal, when all controls are set to the maximum position.

- Number in red circle indicates waveform number.
- When arrow mark (\nearrow) is found, connection is easily found along with the direction of an arrow.
- When schematic diagram of a board is described in more than two places, they are encircled with dotted line (---).
- This schematic diagram is the latest at the time of printing and subject to change without notice.

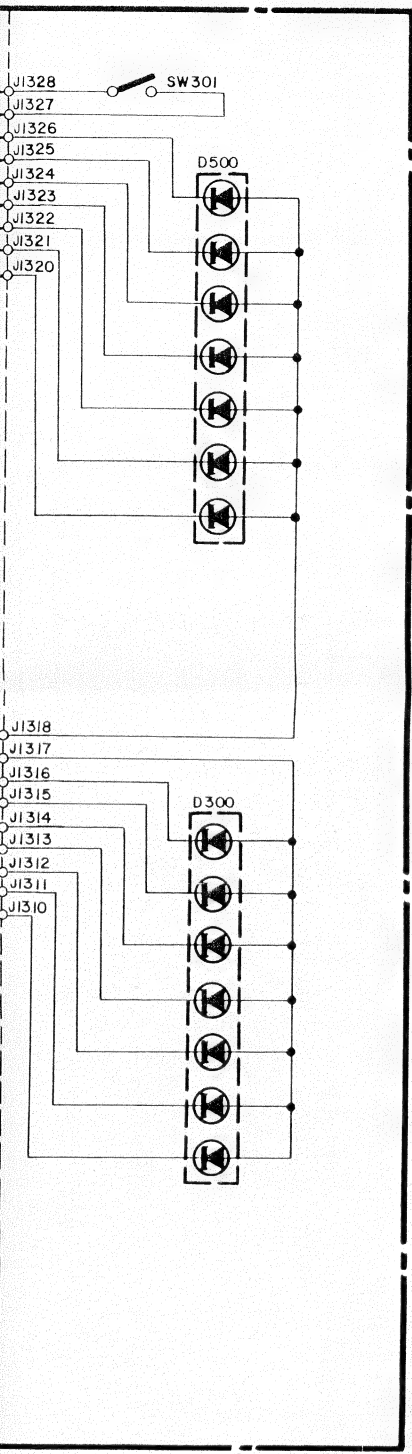
SCHEMATIC DIAGRAM FOR LED METER



LED METER CIRCUIT BOARD
TNP82964-31H



CONDUCTOR VIEWS
AUDIO CIRCUIT BOARD
TNP82927-33



| Q152 | |
|------|------|
| C | 3.5V |
| B | 0.7V |
| E | 0.1V |

| Q142 | |
|------|------|
| C | 3.3V |
| B | 0.7V |
| E | 0.1V |

| Q141 | |
|------|------|
| C | 1.7V |
| B | 0.7V |
| E | 0.1V |

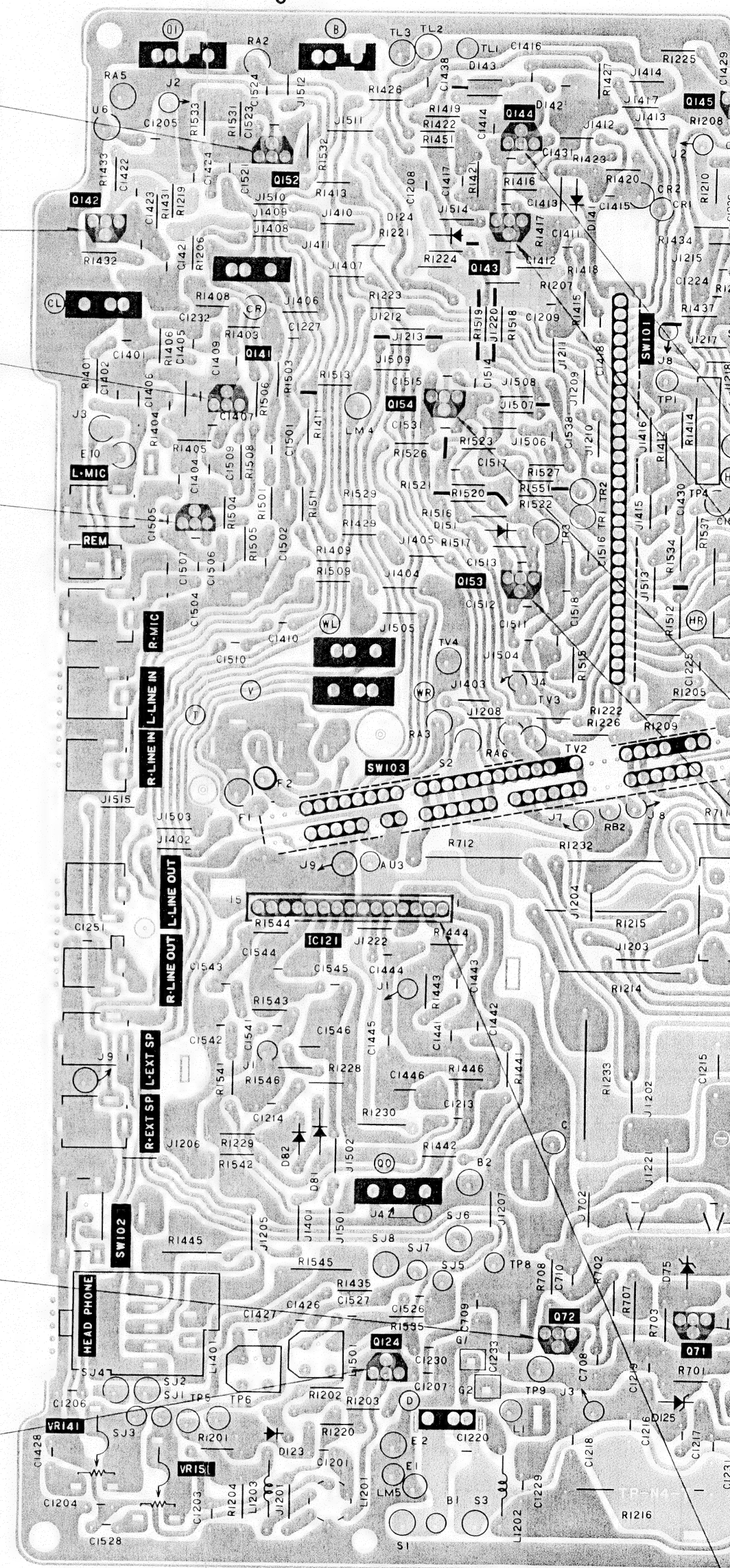
| Q151 | |
|------|------|
| C | 1.6V |
| B | 0.7V |
| E | 0.1V |

| IC131 | | | |
|-------|-------|----|------|
| 1 | 0.6V | 9 | 0V |
| 2 | 0.1V | 10 | 9.5V |
| 3 | 0V | 11 | 9.5V |
| 4 | 11.5V | 12 | 9.5V |
| 5 | 2.7V | 13 | 9.5V |
| 6 | 2.7V | 14 | 10V |
| 7 | 0V | 15 | 2V |
| 8 | 0V | 16 | 0.4V |

| Q502 | |
|------|------|
| C | 10V |
| B | 2V |
| E | 2.7V |

| Q72 | | |
|-----|-----------|-----------|
| | Play Back | Recording |
| C | 0V | 0.9V |
| B | 23V | 18.5V |
| E | 24V | 19.1V |

| Q124 | | |
|------|-----------|-----------|
| | Play Back | Recording |
| C | 11.8V | 9.4V |
| B | 11.8V | 2.2V |
| E | 11.4V | 2.1V |

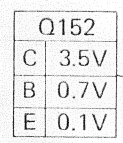


| IC121 | | | | | | | | | | | | | |
|-----------|------|------|----|----|-------|------|-------|----|-------|------|-------|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Playback | 5.8V | 5.3V | 0V | 0V | 11.9V | 2.8V | 24V | 0V | 23.5V | 2.8V | 11.8V | 0V | 0 |
| Recording | 5.1V | 4.6V | 0V | 0V | 9.4V | 2.1V | 19.7V | 0V | 19V | 2.2V | 9.5V | 0V | 0 |

CONDUCTOR VIEWS

AUDIO CIRCUIT BOARD

TNP82927-33



| | |
|------|------|
| Q142 | |
| C | 3.3V |
| B | 0.7V |
| E | 0.1V |

| | |
|------|------|
| Q141 | |
| C | 1.7V |
| B | 0.7V |
| E | 0.1V |

| | |
|------|------|
| Q151 | |
| C | 1.6V |
| B | 0.7V |
| E | 0.1V |

| Q145 | | |
|------|--------------|----------------|
| | Play Back | Record- ing |
| C | 0V | 0V |
| B | 0.4V | 0.6V |
| E | 0V | 0V |

| Q122 | | |
|------|-----------|-----------|
| | Play Back | Recording |
| C | 9.3V | 9.3V |
| B | 0.9V | 1.2V |
| E | 0.4V | 0.6V |

| | |
|------|------|
| Q121 | |
| C | 9.3V |
| B | 6V |
| E | 5.6V |

| | |
|------|-------|
| Q123 | |
| C | 6V |
| B | 0.6V |
| E | 0.05V |

| Q155 | | |
|------|-----------|-----------|
| | Play Back | Recording |
| C | 0V | 0V |
| B | 0.3V | 0.6V |
| E | 0V | 0V |

| | |
|------|------|
| Q144 | |
| C | 6.4V |
| B | 1.3V |
| E | 0.6V |

| | |
|------|------|
| Q143 | |
| C | 1.3V |
| B | 0.6V |
| E | 0V |

| Q154 | |
|------|------|
| C | 6.4V |
| B | 1.3V |
| E | 0.7V |

| Q153 | |
|------|------|
| C | 1.3V |
| B | 0.6V |
| E | 0V |

| Q73 | | |
|-----|--------------|----------------|
| | Play Back | Record- ing |
| C | 11.8V | 11.8V |
| B | 23.9V | 19.6V |
| E | 24.3V | 20.2V |

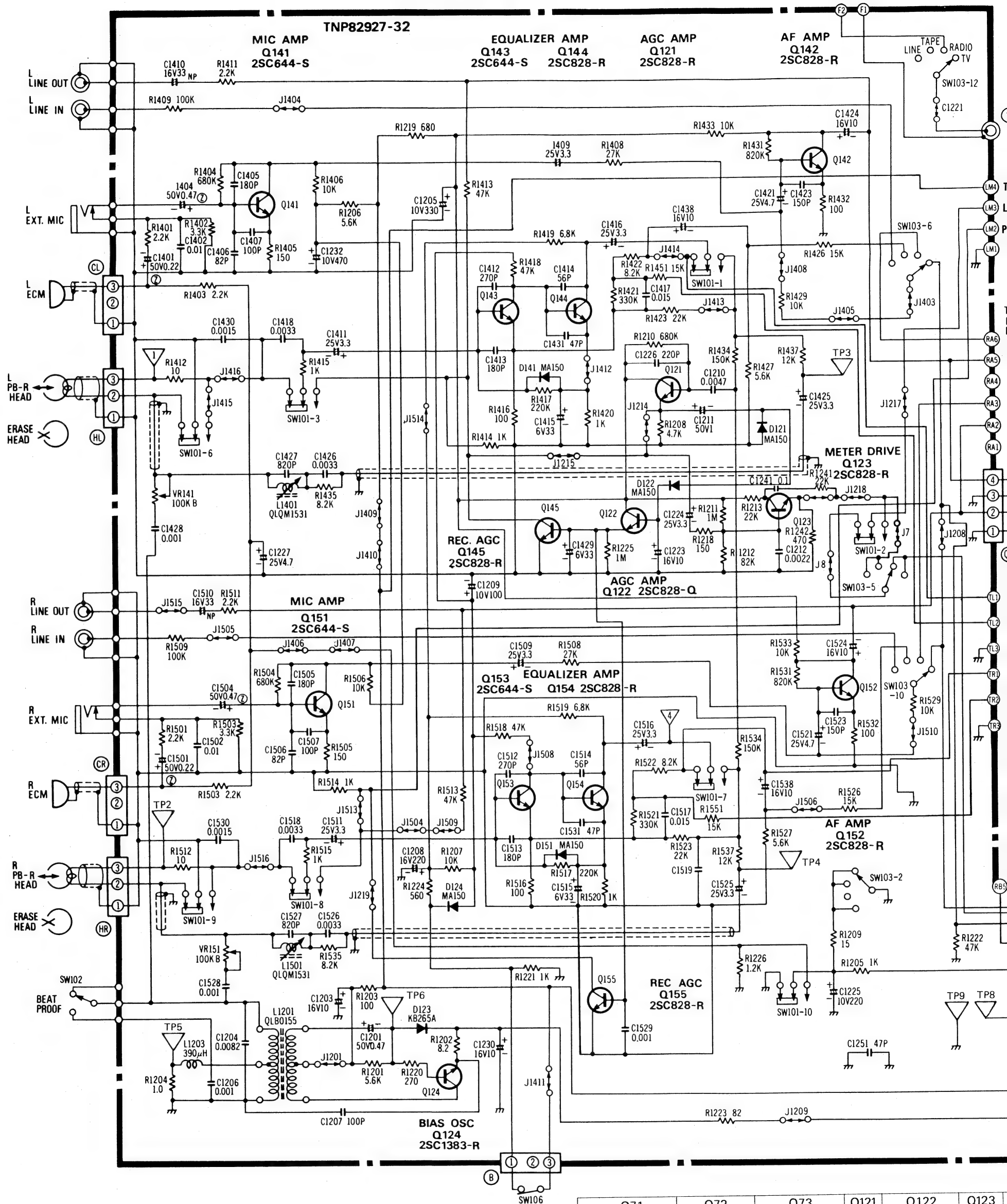
| Q71 | | |
|-----|--------------|----------------|
| | Play Back | Record- ing |
| C | 23V | 18.5V |
| B | 7.7V | 7.7V |
| E | 7.1V | 7.1V |

| Q125 | | |
|------|--------------|----------------|
| | Play Back | Record- ing |
| C | 23.8V | 19.7V |
| B | 8.7V | 8.7V |
| E | 8.2V | 8.2V |

| Q72 | |
|-----------|-----------|
| Play Back | Recording |
| 0V | 0.9V |
| 23V | 18.5V |
| 24V | 19.1V |

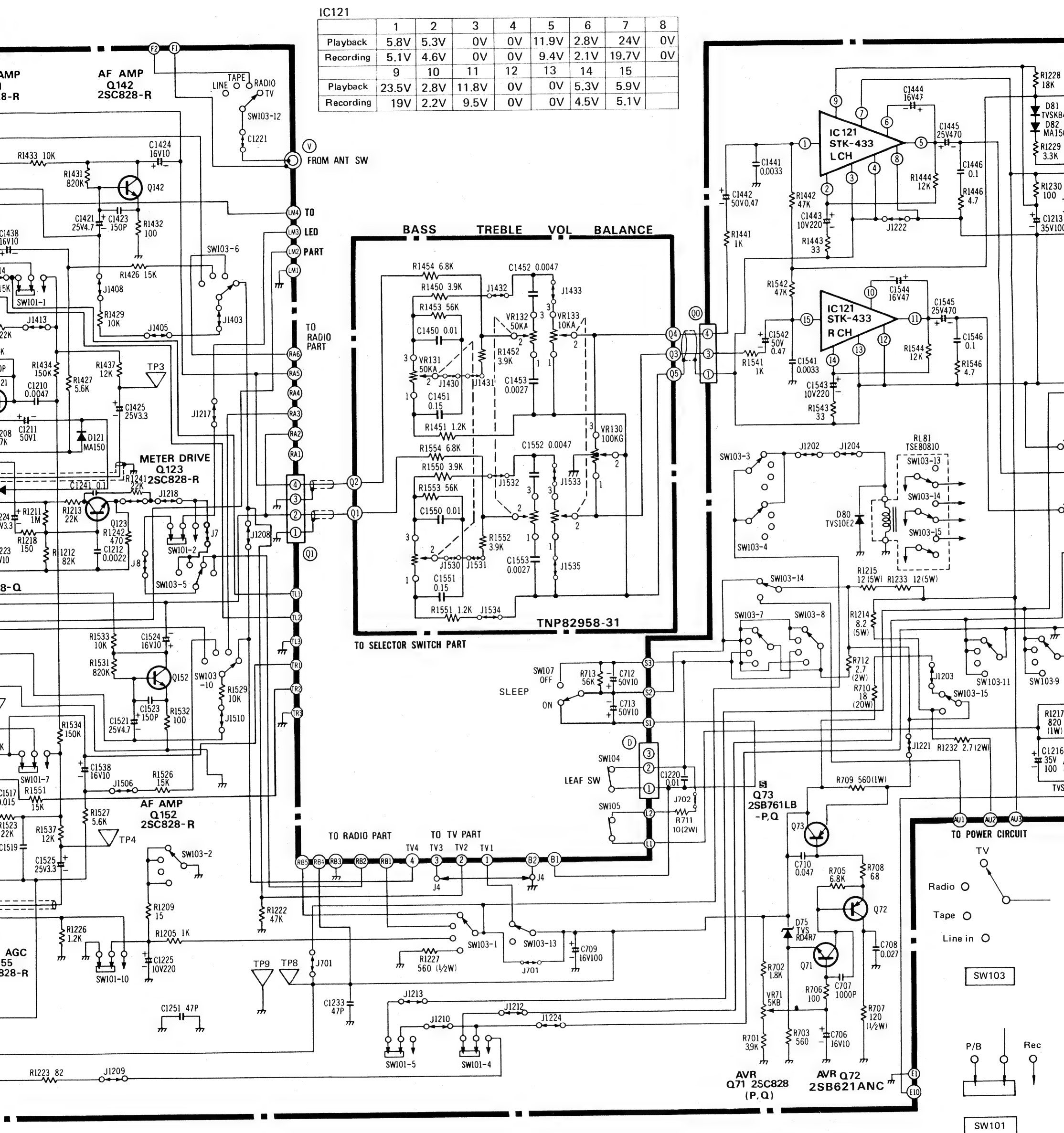
| Q124 | |
|-----------|-----------|
| Play Back | Recording |
| 1.8V | 9.4V |
| 1.8V | 2.2V |
| 1.4V | 2.1V |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-----------|------|------|----|----|-------|------|-------|----|-------|------|-------|----|----|------|------|
| Playback | 5.8V | 5.3V | 0V | 0V | 11.9V | 2.8V | 24V | 0V | 23.5V | 2.8V | 11.8V | 0V | 0V | 5.3V | 5.9V |
| Recording | 5.1V | 4.6V | 0V | 0V | 9.4V | 2.1V | 19.7V | 0V | 19V | 2.2V | 9.5V | 0V | 0V | 4.5V | 5.1V |



| | Q71 | | Q72 | | Q73 | | Q121 | | Q122 | | Q123 | |
|---|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| | Play Back | Record-ing | Play Back | Record-ing | Play Back | Record-ing | Play Back | Record-ing | Play Back | Record-ing | Play Back | Record-ing |
| C | 23V | 18.5V | 0V | 0.9V | 11.8V | 11.8V | 9.3V | 9.3V | 9.3V | 9.3V | 6V | |
| B | 7.7V | 7.7V | 23V | 18.5V | 23.9V | 19.6V | 6V | 0.9V | 1.2V | 0.6V | 0.6V | |
| E | 7.1V | 7.1V | 24V | 19.1V | 24.3V | 20.2V | 5.6V | 0.4V | 0.6V | 0.05V | 0.05V | |

SCHEMATIC DIAGRAM FOR AUDIO

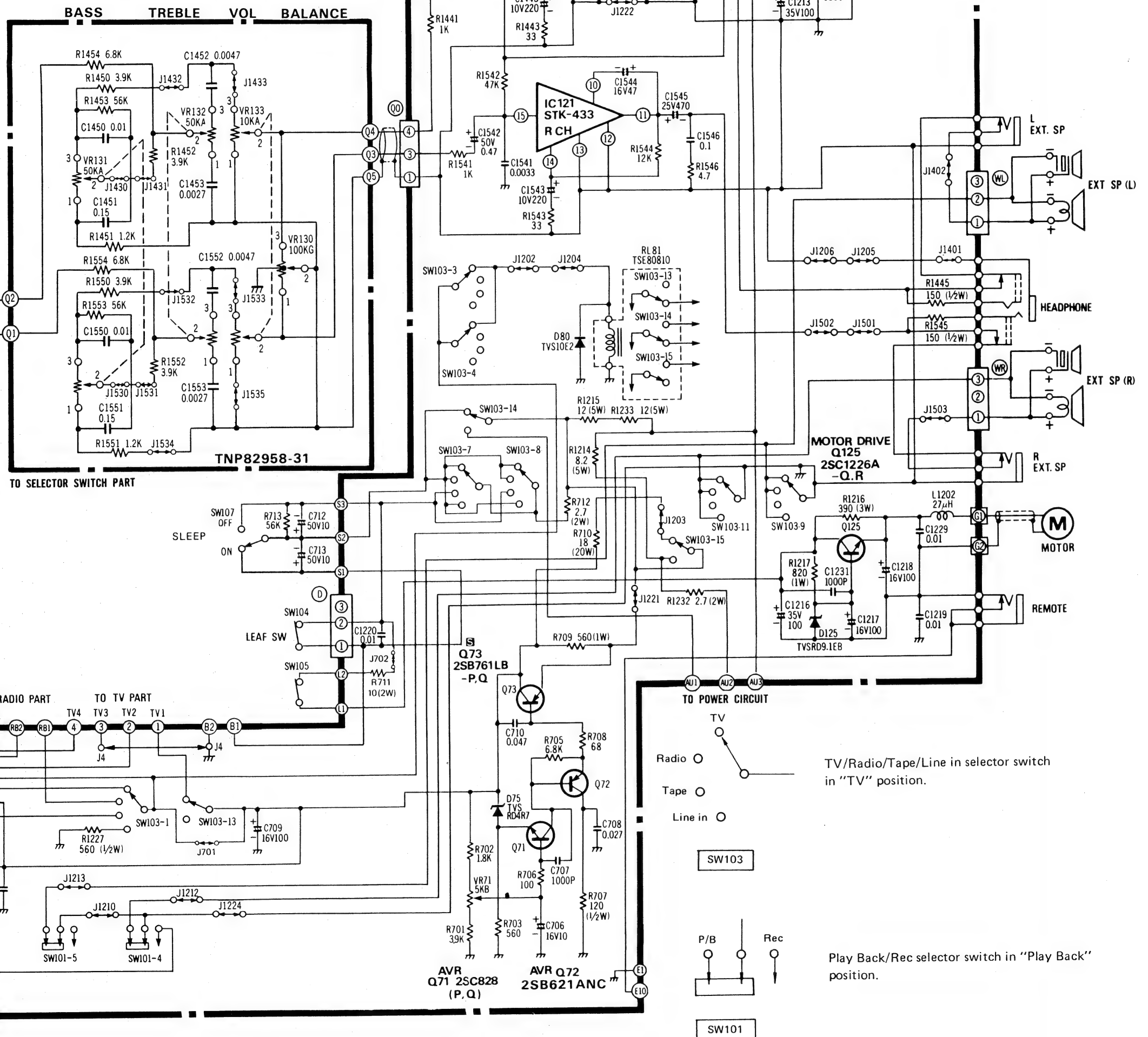


| Q72 | | Q73 | | Q121 | Q122 | | Q123 | Q124 | | Q125 | | Q141 | Q142 | Q143 | Q144 | Q145 | | Q151 | Q152 | Q153 | Q154 | Q155 | |
|-----------|------------|-----------|------------|------|-----------|------------|-------|-----------|------------|-----------|------------|------|------|------|------|-----------|------------|------|------|------|------|-----------|------------|
| Play Back | Record-ing | Play Back | Record-ing | | Play Back | Record-ing | | Play Back | Record-ing | Play Back | Record-ing | | | | | Play Back | Record-ing | | | | | Play Back | Record-ing |
| 0V | 0.9V | 11.8V | 11.8V | 9.3V | 9.3V | 9.3V | 6V | 11.8V | 9.4V | 23.8V | 19.7V | 1.7V | 3.3V | 1.3V | 6.4V | 0V | 0V | 1.6V | 3.5V | 1.3V | 6.4V | 0V | 0V |
| 23V | 18.5V | 23.9V | 19.6V | 6V | 0.9V | 1.2V | 0.6V | 11.8V | 2.2V | 8.7V | 8.7V | 0.7V | 0.7V | 0.6V | 1.3V | 0.4V | 0.6V | 0.7V | 0.7V | 0.6V | 1.3V | 0.3V | 0.6V |
| 24V | 19.1V | 24.3V | 20.2V | 5.6V | 0.4V | 0.6V | 0.05V | 11.4V | 2.1V | 8.2V | 8.2V | 0.1V | 0.1V | 0V | 0.6V | 0V | 0V | 0.1V | 0.1V | 0V | 0.7V | 0V | 0V |

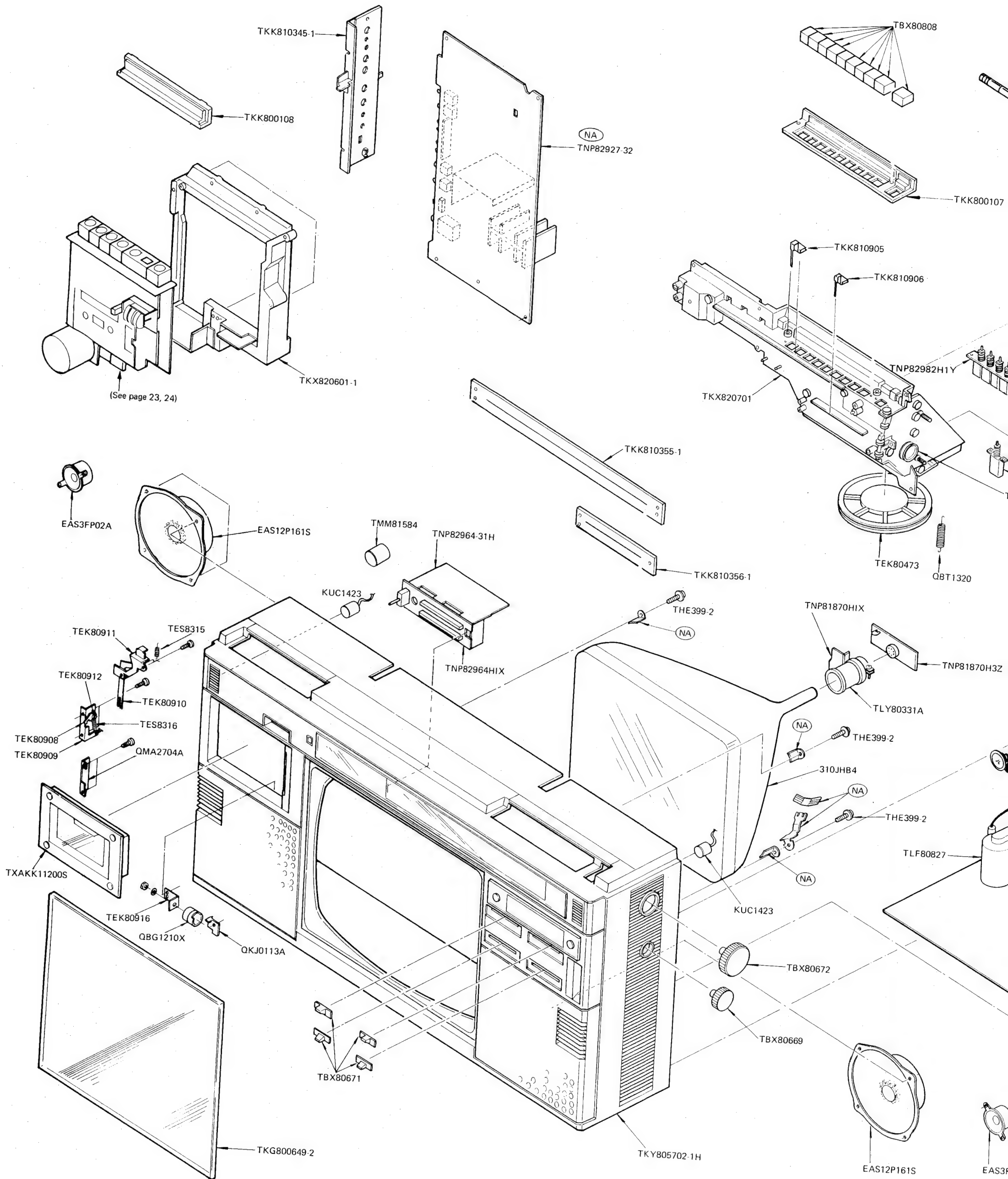
GRAM FOR AUDIO

| | | | | | | | | |
|--------|-------|------|-------|----|-------|------|-------|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| back | 5.8V | 5.3V | 0V | 0V | 11.9V | 2.8V | 24V | 0V |
| ording | 5.1V | 4.6V | 0V | 0V | 9.4V | 2.1V | 19.7V | 0V |
| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| back | 23.5V | 2.8V | 11.8V | 0V | 0V | 5.3V | 5.9V | |
| ording | 19V | 2.2V | 9.5V | 0V | 0V | 4.5V | 5.1V | |

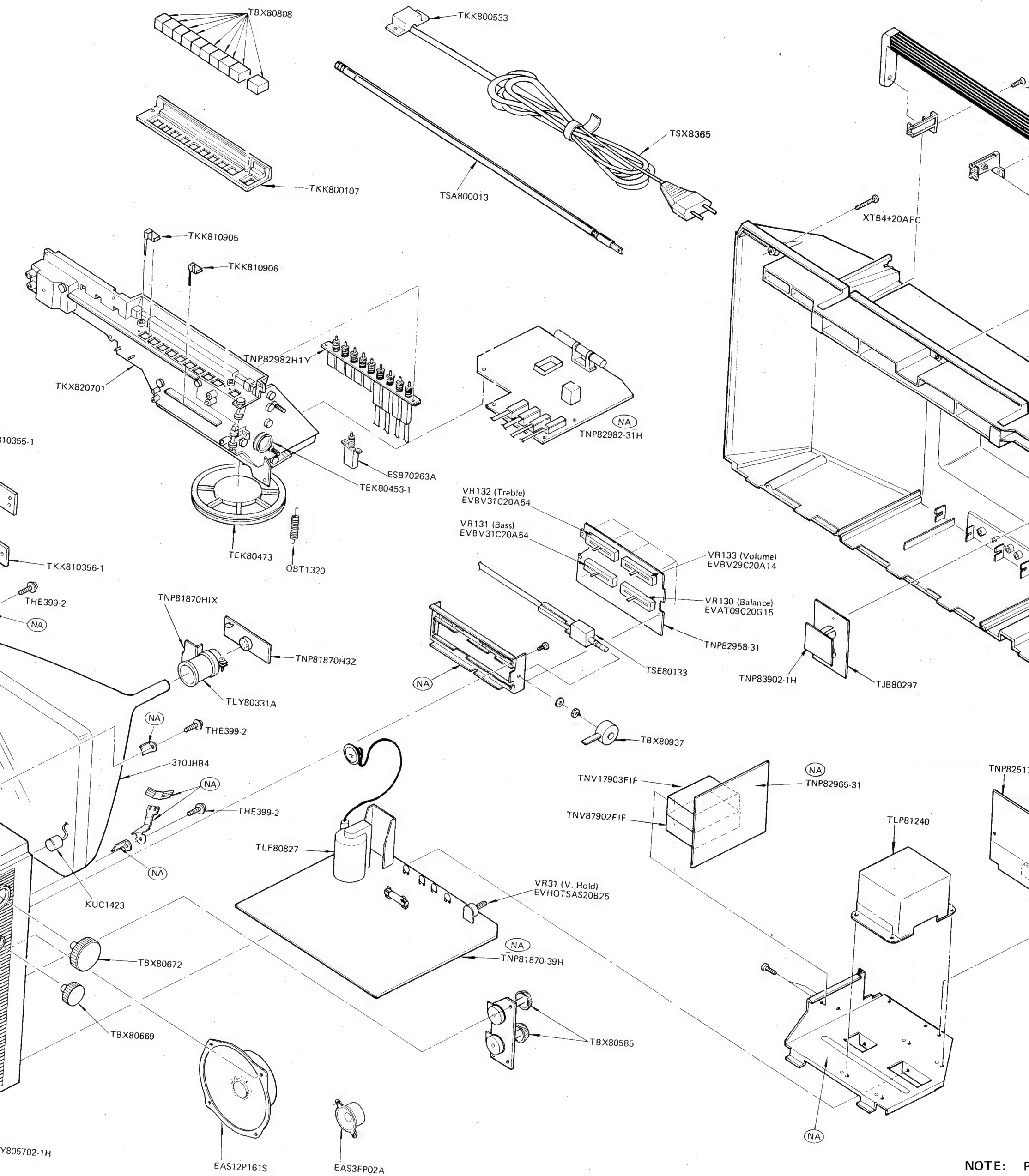
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| 24 | Q125 | | Q141 | Q142 | Q143 | Q144 | Q145 | | Q151 | Q152 | Q153 | Q154 | Q155 | |
|----------------|--------------|----------------|------|------|------|------|--------------|----------------|------|------|------|------|--------------|----------------|
| Record- ing | Play Back | Record- ing | | | | | Play Back | Record- ing | | | | | Play Back | Record- ing |
| 9.4V | 23.8V | 19.7V | 1.7V | 3.3V | 1.3V | 6.4V | 0V | 0V | 1.6V | 3.5V | 1.3V | 6.4V | 0V | 0V |
| 2.2V | 8.7V | 8.7V | 0.7V | 0.7V | 0.6V | 1.3V | 0.4V | 0.6V | 0.7V | 0.7V | 0.6V | 1.3V | 0.3V | 0.6V |
| 2.1V | 8.2V | 8.2V | 0.1V | 0.1V | 0V | 0.6V | 0V | 0V | 0.1V | 0.1V | 0V | 0.7V | 0V | 0V |

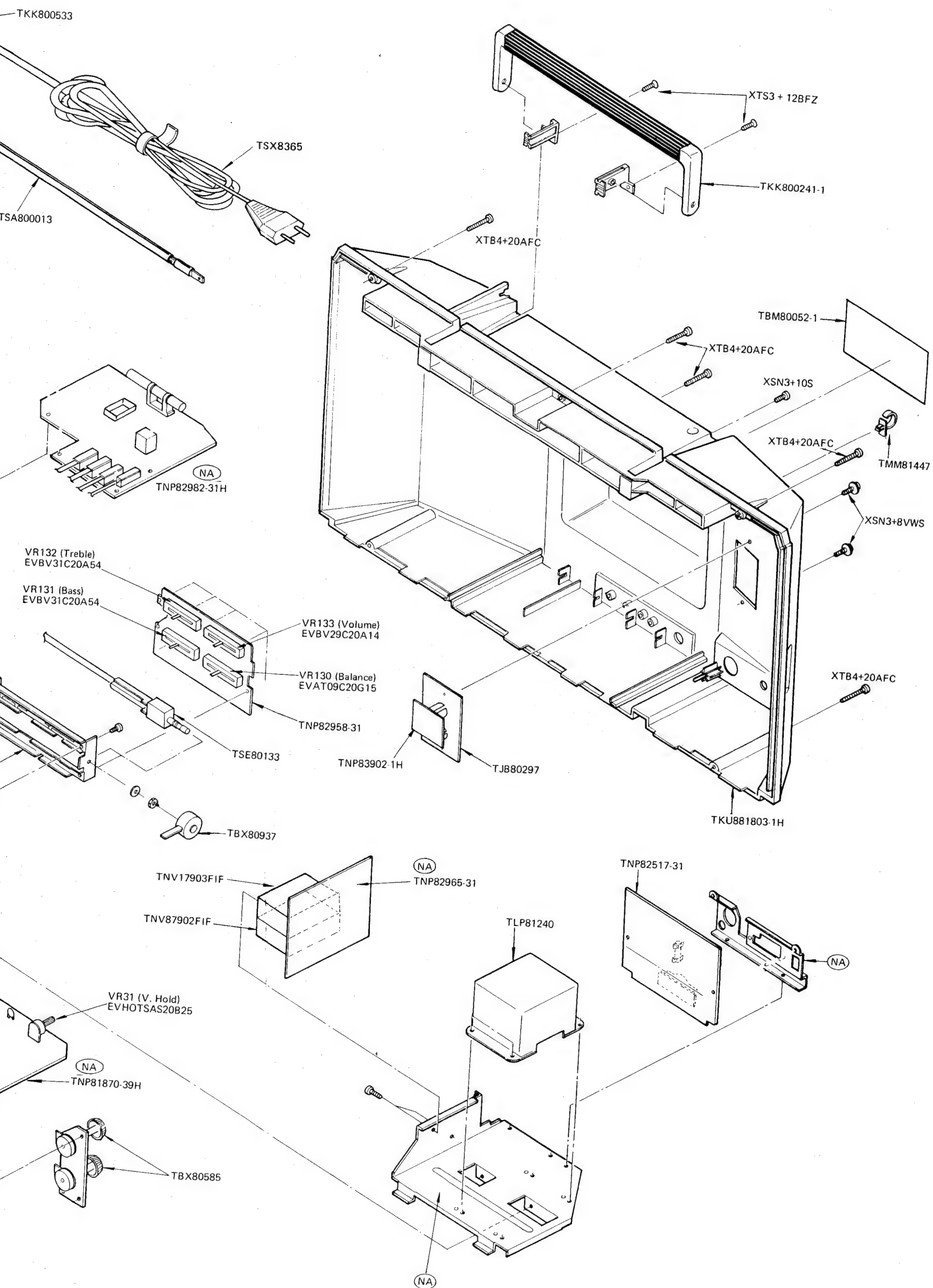


TELEVISION EXPLODED VIEWS



NOTE: P
U
ANMERKU

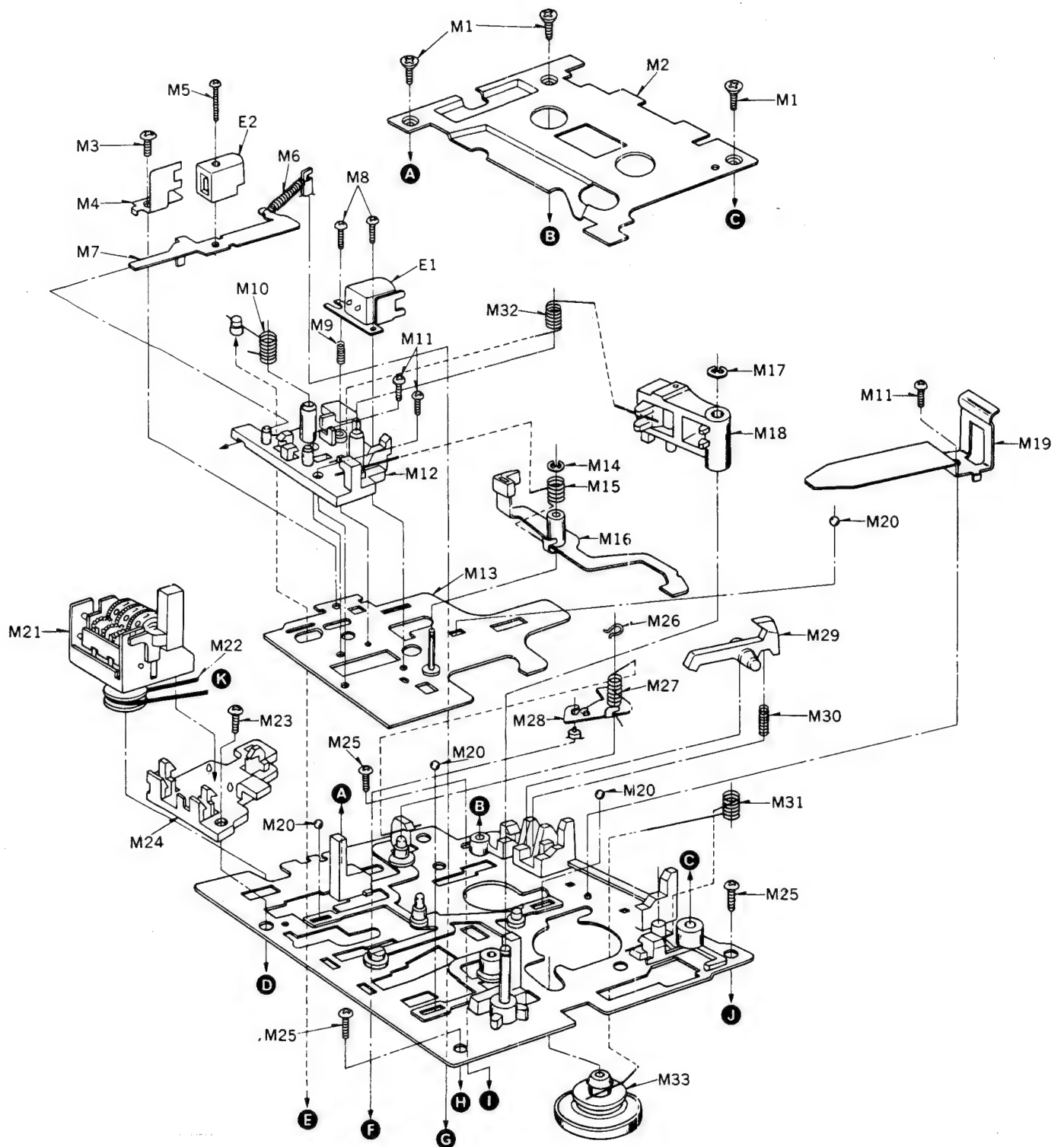
VIEWS



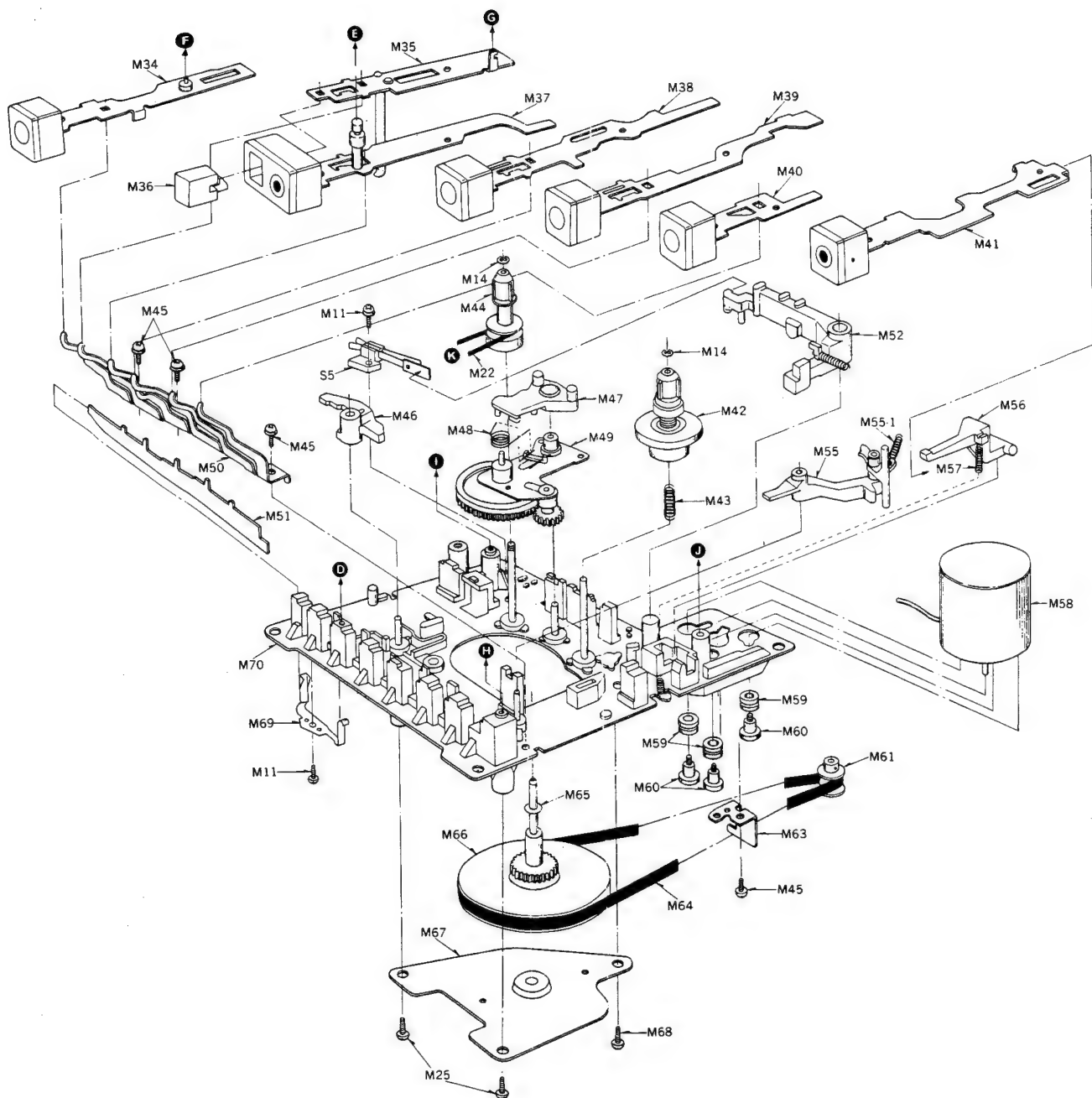
NOTE: Parts or Components marked with (NA) and unlisted are not available as a replacement parts.

ANMERKUNG: Durch (NA) gekennzeichnete Ersatz- und Bauteile sowie nicht aufgeführte Teile sind nicht als Ersatzteile lieferbar.

CASSETTE RECORDER EXPLODED VIEWS (1)



CASSETTE RECORDER EXPLODED VIEWS (2)



REPLACEMENT PARTS LIST

ERSATZTEILLISTE

Note: TNP81870-39H (Main Circuit Board), TNP82927-32(Audio Circuit Board), TNP82965-31(Tuner Circuit Board) and TNP82982-31H(Radio Circuit Board) are not available as a complete Printed Circuit Board.

Anmerkung: TNP81870-39H (Hauptleiterplatte), TNP82927-32 (Ton-Leiterplatte), TNP82965-31 (Tuner-Leiterplatte) und TNP82982-31H (Radio-Leiterplatte) sind nicht als komplette Leiterplatte lieferbar.

| Ref.No. | Part No. | Description | Ref.No. | Part No. | Description |
|---------------------------------------|--------------|---|---------|--------------|--|
| CABINET AND MAIN CHASSIS PARTS | | | | TNP81870H1X | Deflection Yoke Circuit Board Complete |
| | TKY805701-1H | Front Cabinet Complete | | TNP81870H3Z | Picture Tube Socket Circuit Board Complete |
| | TKU881803-1H | Rear Cover Complete | | | |
| | TKG800649-2 | Front Protector | | TNP82958-31 | Tone Circuit Board Complete |
| | TKK800533 | Cord Holder | | TNP82964-31H | Led Circuit Board Complete |
| | TKK800107 | Radio Knob Dish | | | |
| | TKK800108 | Cassette Knob Dish | | TNP82964H1X | Led Meter Circuit Board Complete |
| | TKK800241-1 | Handle Complete | | | |
| | TKK810345-1 | Line Terminal Board | | TNP82982H1X | Stereo LED Circuit Board Complete |
| | TKK810355-1 | Radio Indicator | | TNP82982H1Y | 8-Range Selector Switch Circuit Board Complete |
| | TKK810356-4 | TV Indicator | | | |
| | TKK810903 | Radio Reflection Plate | | TNP82517-31 | Power Circuit Board Complete |
| | TKK810904 | TV Reflection Plate | | TNP83902-1H | Antenna Circuit Board Complete |
| | TKK810905 | Radio Dial Guide | | EAS12P161S | Speaker (woofer) |
| | TKK810906 | TV Dial Guide | | EAS3FP02A | Speaker (Tweeter) |
| | TXAKK11200S | Cassette Cover Complete | | KUC1423 | Microphone |
| | TKX820601-1 | Cassette Bracket | | TSA800013 | Rod Antenna |
| | TKX820701 | Radio Bracket | | TSX8365 | Power Cord |
| | TBM80052-1 | Model Plate | | ESB70263A | Power Switch |
| | TBX80808 | Push Knob | | | |
| | TBX80672 | Radio Tuning Knob | | TSE80133 | TV/Radio/Tape/Line Function Switch |
| | | | | TSE80427 | MW/SW/FM Selector Switch |
| | TBX80669 | TV Tuning Knob | | TSE80428 | LW Selector Switch |
| | TBX80937 | TV/Radio/Tape/Line Selector Knob | | TSE80607 | Sleep Switch |
| | TBX80671 | Slide Knob | C712 | ECEA1HS010 | Electrolytic 1μF 50V |
| | TBX80585 | Rear Knob | | | |
| | TEK80453-1 | TV Pulley | C713 | ECEA1HS010 | Electrolytic 1μF 50V |
| | TEK80473 | Radio Pulley | | | |
| | TEK80908 | Cassette Cover Stopper | R713 | ERD25TJ563 | Carbon Resistor 56kΩ ±5% ¼W |
| | TEK80909 | Cassette Cover Holding Bracket | VR62 | EVVB1AF2513X | Contrast Control 1KΩX |
| | TEK80910 | Cassette Cover Stopper Movement Bracket | VR63 | EVVB0AF25B55 | Bright Control 500kΩB |
| | | | VR91 | EVHBJA095B15 | Tuning Control 100kΩB |
| | TEK80911 | Cassette Cover Stopper Movement Bracket | | XBA2C05TR0 | Fuse 0.5A |
| | TEK80912 | Cassette Cover Shaft Holder | | TJB80297 | Antenna Terminal Board |
| | TEK80916 | Damper | | TJS828270 | 75Ω Terminal |
| | TES8315 | Cassette Cover Stopper Spring (A) | | TJT8526-1 | 3-P Socket Housing |
| | TES8316 | Cassette Cover Stopper Spring (B) | | TJT8718 | Socket Housing Terminal |
| | TMM81447 | Cord Hook | | TXAJT3P226 | 3-P Mini. Connector Ass'y (for Sleep SW.) |
| | TMM81584 | Microphone Rubber | | TXAJT3P228 | 3-P Mini. Connector Ass'y (for Microphone) |
| | QBG1210X | Vibration Defend Rubber | | TXAJT3P268 | 3-P Mini. Connector Ass'y (for Microphone) |
| | QBT1320 | Coil Spring | | TXAJT3P230 | 3-P Mini. Connector Ass'y (for Speaker) |
| | QDP1678 | Roller (Big) | | TXAJT3P231 | 3-P Mini. Connector Ass'y (for Speaker) |
| | QDP1684 | Roller (Small) | | | |
| | QKJ0113A | Cassette Case Holder | | TXAJT3P249A | 3-P Mini. Connector Ass'y (for Cassette Mecha) |
| | QMA2704A | Cassette Case Spring Angle | | TXAJT3P250 | 3-P Mini. Connector Ass'y (for Connector P.C.B.) |
| | QMN8001 | Roller Shaft | | TXAJT4P112 | 4-P Mini. Connector Ass'y (for Radio) |
| | QXS1064 | Dial Shaft | | | |
| | QYR0158 | Cassette Mecha Chassis Cover Complete | | | |
| | RDY31A | Roller Shaft (Big) | | | |
| | 310JHB4 | Picture Tube | | | |
| | TLP81240 | Power Trans. | | | |
| | TLY80331A | Deflection Yoke | | | |

| Ref.No. | Part No. | Description | Ref.No. | Part No. | Description |
|-----------------------------|--------------|---|---------------------------------|--------------|---------------------------|
| SCREWS & WASHERS | | | C906 | ECCD1H010CC | Ceramic 1PF ±0.25PF 50V |
| | XTB4+20AFC | Rear Cover Mounting Screw | C907 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V |
| | XTS3+12BFZ | Handle Mounting Screw | C908 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V |
| | XSN3+10S | Rod Antenna Mounting Screw | C909 | ECCD1H560J | Ceramic 56PF ±5% 50V |
| | XSN3+8VWS | Antenna Terminal Board Mounting Screw | X902 | EXCFT88108C | FM Band Pass Filter |
| | XWG3VW | Antenna Terminal Board Mounting Washer | TNP82517-31 | | |
| | THE399-2 | Picture Tube Mounting Screw | D781 | TVS30D1 | Power Rectifier |
| | XTN26+8G | Cassette Cover Shaft Hoder Mounting Screw | D782 | TVS30D1 | Power Rectifier |
| | TPDS09026 | Front Window Protector | D783 | TVS30D1 | Power Rectifier |
| | TPC812481 | Outer Carton | D784 | TVS30D1 | Power Rectifier |
| | TXAPD21200 | Filler Complete | C781 | ECFWE104KDY | Ceramic 0.1μF ±10% 50V |
| | TPE84014 | Set Cover | C782 | ECFWE104KDY | Ceramic 0.1μF ±10% 50V |
| | TQB811302 | Fun Bag | C783 | ECFWE104KDY | Ceramic 0.1μF ±10% 50V |
| | TQB810302 | Instruction Book | C784 | ECFWE104KDY | Ceramic 0.1μF ±10% 50V |
| | | | C785 | ECQM05103JZ | Polyester 0.01μF ±5% 50V |
| | | | FS1 | TJC3316 | Fuse Holder |
| | | | FS2 | | |
| | | | AU | TJS868250 | 3-P Mini. Connector Plug |
| | | | | TJS82805 | DC. Socket |
| TNP82964H1X | | | TNP81870-39H | | |
| D300 | LN07201PF | 7-Range LED Meter | I.C | | |
| D500 | LN07201PF | 7-Range LED Meter | IC11 | TVSMP1355C | Video-IF |
| SW301 | TSE80328 | LED On-Off Switch | IC12 | TVSMP596C2 | Video-DET. |
| TNP82982H1X | | | IC31 | AN295 | Sync. Sep. Amp. V/H osc. |
| D106 | LN28RP | Stereo LED | IC41 | TVSMP574J | Zener |
| TNP82982H1Y | | | IC51 | AN355 | Audio |
| | TSE80421 | 8-Range Selector Switch | TRANSISTORS | | |
| TNP81870H1X | | | Q43 | 2SC1318 | Horiz. Drive |
| C340 | ECQM05104JZ | Polyester 0.1μF ±5% 50V | Q44 | 2SD772B LB | Horiz. Output |
| R315 | ERD25TJ271 | Carbon 270kΩ ±5% ¼W | DIODES | | |
| TNP81870H3Z | | | D31 | TVS10E1 | Rectifier |
| Q15 | 2SC1573NC | Trangistor (Vided Output) | D38 | MA150 | Blanking |
| L143 | TLU820K106C | Peaking Coil 82μH | D43A | TVS10E2 | Damper |
| C148 | EOQM05104JZ | Polyester 0.1μF ±5% 50V | D43B | TVS10E2 | Damper |
| C601 | ECKD2H102KB2 | Ceramic 1,000PF ±10%500V | D44 | TVS10E2 | Blanking |
| R147 | ERD25TJ222 | Carbon 2.2kΩ ±5% ¼W | D45 | TVSBB2A | Rectifier |
| | | | D48A | TVSBB2A | Rectifier |
| R148 | ERG1ANJ562 | Metal Oxide Resistor 5.6kΩ ±5% 1W | D48B | TVSBB2A | Rectifier |
| R149 | ERD25TJ224 | Carbon 220kΩ ±5% ¼W | COILS & TRANSFORMERS | | |
| R150 | ERD25TJ224 | Carbon 220kΩ ±5% ¼W | L101 | TLU1R4M106C | Peaking Coil 1.5μH |
| R151 | ERD25TJ563 | Carbon 56kΩ ±5% ¼W | L103 | TLI803330 | Sound Trap Coil |
| R603 | ERC12GJ332 | Solid 3.3kΩ ±5% ½W | L106 | TLI801356 | Video If Trans. |
| | | | L108 | TLI801357 | Video If Trans. |
| R604 | ERD25TJ334 | Carbon 330kΩ ±5% ¼W | L109 | TLI801357 | Video If Trans. |
| R607 | ERD25TJ103 | Carbon 10kΩ ±5% ¼W | L132 | TLU100K106C | Peaking Coil 10μH |
| R608 | ERD25TJ103 | Carbon 10kΩ ±5% ¼W | L133 | TLU391K106C | Peaking Coil 390μH |
| R609 | ERD25TJ822 | Carbon 8.2kΩ ±5% ¼W | L201 | TLS804308 | Sound-If Input Coil |
| VR64 | EVTVDUA00B55 | Sub. Bright Control 500kΩB | L202 | TLS803204 | Sound Det. Trans. |
| | TJS25640V | Picture Tube Socket | L204 | TLU100K106C | Peaking Coil 10μH |
| TNP83902-1H | | | L302 | TLU391K106C | Peaking Coil 390μH |
| C901 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V | L303 | TLU100K106C | Peaking Coil 10μH |
| C902 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V | L403 | TLH80706 | Horiz. Width Coil |
| C903 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V | | | |
| C904 | ECKD2H102KB2 | Ceramic 1,000PF ±10% 500V | | | |

| Ref.No. | Part No. | Description | | | | Ref.No. | Part No. | Description | | | |
|------------|--------------|---------------------|---------|--------------|------|-----------|--------------|--------------|---------|--------------|------|
| L404 | TLH80606 | Horiz. Lin. Coil | | | | C312 | ECSZ16EF4R7N | Tantal | 4.7μF | | 16V |
| L405 | TLP408 | Choke Coil | | | | C313 | ECSZ10EF10Y | Tantal | 10μF | | 10V |
| L406 | TLP408 | Choke Coil | | | | C314 | ECEA1AS102 | Electrolytic | 1,000μF | 10V | 10V |
| L407 | TLP412-2 | Choke Coil | | | | C315 | ECQM05104JZ | Polyester | 0.1μF | ±5% | 50V |
| T401 | TLF80827 | Flyback Trans. | | | | C316 | ECEA1CS221 | Electrolytic | 220μF | | 16V |
| T402 | TLH80410 | Horiz. Drive Trans. | | | | C317 | ECEA1CS471 | Electrolytic | 470μF | | 16V |
| CAPACITORS | | | | | | C318 | ECEA0JS102 | Electrolytic | 1,000μF | | 6.3V |
| C101 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C319 | ECEA16Z10E | Electrolytic | 10μF | | 16V |
| C107 | ECCD1H030CT | Ceramic | 3PF | ±0.25PF | 50V | C320 | ECQM05333JZ | Polyester | 0.033μF | ±5% | 50V |
| C108 | ECCD1H030CT | Ceramic | 3PF | ±0.25PF | 50V | C321 | TCSZ35EFR33V | Tantal | 0.33μF | | 35V |
| C109 | ECCD1H050CS | Ceramic | 5PF | ±0.25PF | 50V | C322 | ECEA1CS100 | Electrolytic | 10μF | | 16V |
| C111 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C323 | ECCD1H221J | Ceramic | 220PF | ±5% | 50V |
| C115 | ECCD1H560JS | Ceramic | 56PF | ±5% | 50V | C325 | ECEA1HS2R2 | Electrolytic | 2.2μF | | 50V |
| C116 | ECCD1H271J | Ceramic | 270PF | ±5% | 50V | C326 | ECQM05273JZ | Polyester | 0.027μF | ±5% | 50V |
| C117 | ECCD1H330JS | Ceramic | 33PF | ±5% | 50V | C341 | ECKD1H471KB2 | Ceramic | 470PF | ±10% | 50V |
| C118 | ECKD1H102KB2 | Ceramic | 1000PF | ±10% | 50V | C342 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V |
| C119 | ECCD1H220J | Ceramic | 22PF | ±5% | 50V | C409 | ECCD2H680K | Ceramic | 68PF | ±10% | 500V |
| C120 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C410 | ECKD1H102KB2 | Ceramic | 1,000PF | ±10% | 50V |
| C121 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C411 | ECQM05153JZ | Polyester | 0.015μF | ±5% | 50V |
| C124 | ECCD1H680J | Ceramic | 68PF | ±5% | 50V | C412 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V |
| C125 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C413 | ECKD2H222KB2 | Ceramic | 2200PF | ±10% | 500V |
| C131 | ECEA1CS331 | Electrolytic | 330μF | | 16V | C415 | ECKD2H102KB2 | Ceramic | 1,000PF | ±10% | 400V |
| C136 | ECEA1CS221 | Electrolytic | 220μF | | 16V | C417 | ECKD2H122KB | Ceramic | 1,200PF | ±10% | 500V |
| C142 | ECQM05152JZ | Polyester | 1,500PF | ±5% | 50V | C418 | ECKD2H472KB | Ceramic | 4,700PF | ±10% | 500V |
| C143 | ECEA0JS221 | Electrolytic | 220μF | | 6.3V | C419 | ECQM4393KZ | Polyester | 0.039μF | ±10% | 400V |
| C146 | ECCD1H151J | Ceramic | 150PF | ±5% | 50V | C420 | ECEA25W6R5Z | Electrolytic | 6.5μF | | 25V |
| C181 | ECSZ16EF4R7N | Tantal | 4.7μF | | 16V | C421 | ECQM05473JZ | Polyester | 0.047μF | ±5% | 50V |
| C185 | ECKD1H471KB2 | Ceramic | 470PF | ±5% | 50V | C422 | ECKD2H102KB2 | Ceramic | 1,000PF | ±10% | 500V |
| C186 | ECEA16Z4C7E | Electrolytic | 4.7μF | | 16V | C423 | ECEA160V10Z | Electrolytic | 10μF | | 160V |
| C188 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C424 | ECKD2H391KB9 | Ceramic | 390PF | ±10% | 500V |
| C200 | ECCD1H060CC | Ceramic | 6PF | ±0.25PF | 50V | C425 | ECEA160V4R7 | Electrolytic | 4.7μF | | 160V |
| C201 | ECQS1331JWT | Styrol | 330PF | ±0.25PF | 100V | C426 | ECEA50V100Y | Electrolytic | 100μF | | 50V |
| C202 | ECKD1H473ZF | Ceramic | 0.047μF | +80% -20% | 50V | C427 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V |
| C203 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C430 | ECKD2H102KB2 | Ceramic | 1,000PF | ±10% | 500V |
| C204 | ECEA1CS102 | Electrolytic | 1000μF | | 16V | C705 | ECET35R3300W | Electrolytic | 3,300μF | | 35V |
| C205 | ECCD1H820JP2 | Ceramic | 82PF | ±5% | 50V | C710 | ECEA1CS102 | Electrolytic | 1,000μF | | 16V |
| C206 | ECCD1H070CC | Ceramic | 7PF | ±0.25PF | 50V | RESISTORS | | | | | |
| C207 | ECQM05103JZ | Polyester | 0.01μF | ±5% | 50V | R101 | ERD25TJ470 | Carbon | 47Ω | ±5% | ¼W |
| C208 | ECQM05153JZ | Polyester | 0.015μF | ±5% | 50V | R102 | ERD25TJ222 | Carbon | 2.2kΩ | ±5% | ¼W |
| C209 | ECKD1H102KB2 | Ceramic | 1,000PF | ±10% | 50V | R104 | ERD25TJ152 | Carbon | 1.5kΩ | ±5% | ¼W |
| C214 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | R105 | ERD25TJ103 | Carbon | 10kΩ | ±5% | ¼W |
| C301 | ECEA1CS470 | Electrolytic | 4.7μF | | 16V | R106 | ERD25TJ152 | Carbon | 1.5kΩ | ±5% | ¼W |
| C302 | ECQM05153JZ | Polyester | 0.015μF | ±5% | 50V | R107 | ERD25TJ471 | Carbon | 470Ω | ±5% | ¼W |
| C303 | ECQM05183JZ | Polyester | 0.018μF | ±5% | 50V | R108 | ERD25TJ820 | Carbon | 82Ω | ±5% | ¼W |
| C304 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | R141 | ERD25TJ151 | Carbon | 150Ω | ±5% | ¼W |
| C305 | ECQM05103JZ | Polyester | 0.01μF | ±5% | 50V | R142 | ERD25TJ101 | Carbon | 100Ω | ±5% | ¼W |
| C306 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | R143 | ERD25TJ152 | Carbon | 1.5kΩ | ±5% | ¼W |
| C307 | ECQS1682JWT | Styrol | 6800PF | ±5% | 100V | R144 | ERD25TJ391 | Carbon | 390Ω | ±5% | ¼W |
| C308 | ECQM05332JZ | Polyester | 3300PF | ±5% | 50V | R145 | ERD25TJ820 | Carbon | 82Ω | ±5% | ¼W |
| C309 | ECKD1H473ZF | Ceramic | 0.047μF | +80% -20% | 50V | R146 | ERD25TJ474 | Carbon | 470kΩ | ±5% | ¼W |
| C310 | ECQM05473JZ | Polyester | 0.047μF | ±5% | 50V | R152 | ERD25TJ180 | Carbon | 18Ω | ±5% | ¼W |
| C311 | ECEA0JS330 | Electrolytic | 33μF | | 6.3V | R182 | ERD25TJ473 | Carbon | 47kΩ | ±5% | ¼W |
| | | | | | | R183 | ERD25TJ333 | Carbon | 33kΩ | ±5% | ¼W |

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| Ref. No. | Part No. | Description | | | | Ref. No. | Part No. | Description | | | |
|----------|------------|-------------|---------------|------------|----------------|-----------------|--------------|----------------------------|-----------------|-----------|----------------|
| R1206 | ERD25TJ562 | Carbon | 5.6k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1435 | ERD25TJ822 | Carbon | 8.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1207 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1437 | ERD25TJ272 | Carbon | 2.7k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1208 | ERD25TJ472 | Carbon | 4.7k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1441 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1209 | ERD25TJ150 | Carbon | 15 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1442 | ERD25TJ330 | Carbon | 33 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1210 | ERD25TJ684 | Carbon | 680k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1443 | ERD25TJ330 | Carbon | 33 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1211 | ERD25TJ105 | Carbon | 1M Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1444 | ERD25TJ123 | Carbon | 12k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1212 | ERD25TJ823 | Carbon | 82k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1445 | ERD12FJ151 | Carbon | 150 Ω | $\pm 5\%$ | $\frac{1}{2}W$ |
| R1213 | ERD25TJ223 | Carbon | 22k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1446 | ERD25TJ4R7 | Carbon | 4.7 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1214 | TRF5SK8R2 | Non Flame | 8.2 Ω | $\pm 10\%$ | 5W | R1451 | ERD25TJ153 | Carbon | 15k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1215 | TRF5SJ120 | Non Flame | 12 Ω | $\pm 5\%$ | 5W | R1501 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1216 | TRF3SJ391 | Non Flame | 390 Ω | $\pm 5\%$ | 3W | R1503 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1217 | ERG1ANJ821 | Metal Oxide | 820 Ω | $\pm 5\%$ | 1W | R1504 | ERD25TJ684 | Carbon | 680k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1218 | ERD25TJ151 | Carbon | 150 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1505 | ERD25TJ151 | Carbon | 150 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1219 | ERD25TJ681 | Carbon | 680 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1506 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1220 | ERD25TJ271 | Carbon | 270 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1508 | ERD25TJ273 | Carbon | 27k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1221 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1509 | ERD25TJ104 | Carbon | 100k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1222 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1511 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1223 | ERD25TJ820 | Carbon | 82 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1512 | ERD25TJ100 | Carbon | 10 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1224 | ERD25TJ561 | Carbon | 560 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1513 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1225 | ERD25TJ105 | Carbon | 1M Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1514 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1226 | ERD25TJ122 | Carbon | 1.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1515 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1227 | ERC12GJ561 | Solid | 560 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1516 | ERD25TJ101 | Carbon | 100 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1228 | ERD25TJ183 | Carbon | 18k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1517 | ERD25TJ224 | Carbon | 220k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1229 | ERD25TJ332 | Carbon | 3.3k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1518 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1230 | ERD14FJ101 | Carbon | 100 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1519 | ERD25TJ682 | Carbon | 6.8k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1232 | TRF2SK2R7 | Non Flame | 2.7 Ω | $\pm 10\%$ | 2W | R1520 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1233 | TRF5SJ120 | Non Flame | 12 Ω | $\pm 5\%$ | 5W | R1521 | ERD25TJ334 | Carbon | 330k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1241 | ERD25TJ223 | Carbon | 22k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1522 | ERD25TJ822 | Carbon | 8.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1242 | ERD25TJ471 | Carbon | 470 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1523 | ERD25TJ223 | Carbon | 22k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1401 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1526 | ERD25TJ153 | Carbon | 15k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1403 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1527 | ERD25TJ562 | Carbon | 5.6k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1404 | ERD25TJ684 | Carbon | 680k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1529 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1405 | ERD25TJ151 | Carbon | 150 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1531 | ERD25TJ824 | Carbon | 820k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1406 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1532 | ERD25TJ101 | Carbon | 100 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1408 | ERD25TJ273 | Carbon | 27k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1533 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1409 | ERD25TJ104 | Carbon | 100k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1534 | ERD25TJ154 | Carbon | 150k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1411 | ERD25TJ222 | Carbon | 2.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1535 | ERD25TJ822 | Carbon | 8.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1412 | ERD25TJ100 | Carbon | 10 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1537 | ERD25TJ272 | Carbon | 2.7k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1413 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1541 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1414 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1542 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1415 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1543 | ERD25TJ330 | Carbon | 33 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1416 | ERD25TJ101 | Carbon | 100 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1544 | ERD25TJ123 | Carbon | 12k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1417 | ERD25TJ224 | Carbon | 220k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1545 | ERD12FJ151 | Carbon | 150 Ω | $\pm 5\%$ | $\frac{1}{2}W$ |
| R1418 | ERD25TJ473 | Carbon | 47k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1546 | ERD25TJ4R7 | Carbon | 4.7 Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1419 | ERD25TJ682 | Carbon | 6.8k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | R1551 | ERD25TJ153 | Carbon | 15k Ω | $\pm 5\%$ | $\frac{1}{4}W$ |
| R1420 | ERD25TJ102 | Carbon | 1k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | CONTROLS | | | | | |
| R1421 | ERD25TJ334 | Carbon | 330k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | VR71 | EVTS3AA00B13 | AVR | 1k Ω B | | |
| R1422 | ERD25TJ822 | Carbon | 8.2k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | VR141 | EVTS3AA00B15 | Bias Level | 100k Ω B | | |
| R1423 | ERD25TJ223 | Carbon | 22k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | VR151 | EVTS3AA00B15 | Bias Level | 100k Ω B | | |
| R1426 | ERD25TJ153 | Carbon | 15k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | SWITCHES | | | | | |
| R1427 | ERD25TJ562 | Carbon | 5.6k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | SW101 | QSSA203 | Record, Play Back Selector | | | |
| R1429 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | SW102 | ESD1493 | Beat Proof Selector | | | |
| R1431 | ERD25TJ824 | Carbon | 820k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | SW103 | TSE80130 | 4-Step Selector | | | |
| R1432 | ERD25TJ101 | Carbon | 100 Ω | $\pm 5\%$ | $\frac{1}{4}W$ | RL81 | TSE80810 | Relay | | | |
| R1433 | ERD25TJ103 | Carbon | 10k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | | | | | | |
| R1434 | ERD25TJ154 | Carbon | 150k Ω | $\pm 5\%$ | $\frac{1}{4}W$ | | | | | | |

| Ref.No. | Part No. | Description | Ref.No. | Part No. | Description |
|--|--------------------|--|--|---|---------------------------------------|
| JC122 | OTHER PARTS | | Q301 Q302 Q303 Q500 Q501 Q502 Q503 | TRANSISTORS | |
| | XCJ6P21E-A | Head Phone Socket | | 2SC828A | LED Movement |
| | QJA0154 | M-3 Jack (L, Mic./R. Mic./L, Ext. SP/R. Ext. SP) | | 2SC828A | LED Movement |
| | QJA0156 | M-4 Jack (Remote) | | 2SA564A | LED Movement |
| | TJS848090 | P/L, Aux, Audio Terminal | | 2SC828A | Meter Pre.-Amp. |
| | TJS168040 | 4-P Mini. Connector Plug | | 2SC828A | LED Movement |
| | TJS868250 | 3-P Mini. Connector Plug | | 2SC828A | LED Movement |
| | TXAJT3P246 | 3-P Mini. Connector Ass'y | | 2SA564A | LED Movement |
| | TXAJT4P111 | 4-P Mini. Connector Ass'y | | CAPACITORS | |
| | TJT8526-1 | 3-P Socket Housing | | C1301 | ECEA1ES3R3 Electrolytic 3.3μF 25V |
| | TJT8718 | Socket Housing Terminal | | C1302 | ECEA1ES3R3 Electrolytic 3.3μF 25V |
| | TXAJT3P245 | 3-P Mini. Connector Ass'y | | C1303 | ECKD1H102KB2 Ceramic 1,000PF ±10% 50V |
| | TXAJT6P052 | 5-P Mini. Connector Ass'y | | C1304 | ECEA1CS100 Electrolytic 10μF 16V |
| | TXAJT7P005 | 7-P Mini. Connector Ass'y | | C1305 | ECCD1H151JC Ceramic 150PF ±5% 50V |
| TNP82958-31 | | | C1340 | ECEA1ES3R3 Electrolytic 3.3μF 25V | |
| C1450 C1451 C1452 C1453 C1550 C1551 C1552 | CAPACITORS | | C1341 | ECEA50ZR22 Electrolytic 0.22μF 50V | |
| | ECQM05103JZ | Polyester 0.01μF ±5% 50V | C1351 | ECEA1ES3R3 Electrolytic 3.3μF 25V | |
| | ECQM05154KZ | Polyester 0.15μF ±10% 50V | C1352 | ECEA1ES3R3 Electrolytic 3.3μF 25V | |
| | ECQM05472JZ | Polyester 4,700PF ±5% 50V | C1353 | ECKD1H102KB2 Ceramic 1,000PF ±10% 50V | |
| | ECQM05273JZ | Polyester 0.027μF ±5% 50V | C1354 | ECEA1CS100 Electrolytic 10μF 16V | |
| | ECQM05103JZ | Polyester 0.01μF ±5% 50V | C1355 | ECCD1H151JC Ceramic 150PF ±5% 50V | |
| | ECQM05154KZ | Polyester 0.15μF ±10% 50V | RESISTORS | | |
| | ECQM05472JZ | Polyester 4,700PF ±5% 50V | R1301 | ERD10TJ102 Carbon 1kΩ ±5% 1/8W | |
| | | | R1302 | ERD10TJ332 Carbon 3.3kΩ ±5% 1/8W | |
| | | | R1303 | ERD10TJ183 Carbon 18kΩ ±5% 1/8W | |
| R1450 R1451 R1452 R1453 R1454 R1550 R1551 R1552 R1553 R1554 | RESISTORS | | R1306 | ERD10TJ153 Carbon 15kΩ ±5% 1/8W | |
| | ERD25TJ392 | Carbon 3.9kΩ ±5% 1/4W | R1307 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | ERD25TJ122 | Carbon 1.2kΩ ±5% 1/4W | R1308 | ERD10TJ104 Carbon 100kΩ ±5% 1/8W | |
| | ERD25TJ392 | Carbon 3.9kΩ ±5% 1/4W | R1309 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | ERD25TJ563 | Carbon 56kΩ ±5% 1/4W | R1310 | ERD10TJ561 Carbon 560Ω ±5% 1/8W | |
| | ERD25TJ682 | Carbon 6.8kΩ ±5% 1/4W | R1311 | ERD10TJ561 Carbon 560Ω ±5% 1/8W | |
| | ERD25TJ392 | Carbon 3.9kΩ ±5% 1/4W | R1312 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | ERD25TJ122 | Carbon 1.2kΩ ±5% 1/4W | R1313 | ERD10TJ472 Carbon 4.7kΩ ±5% 1/8W | |
| | ERD25TJ392 | Carbon 3.9kΩ ±5% 1/4W | R1314 | ERD25FJ100 Carbon 10Ω ±5% 1/8W | |
| | ERD25TJ563 | Carbon 56kΩ ±5% 1/4W | R1351 | ERD10TJ102 Carbon 1kΩ ±5% 1/8W | |
| VR130 VR131 VR132 VR133 | CONTROLS | | R1352 | ERD10TJ332 Carbon 3.3kΩ ±5% 1/8W | |
| | EVAT09C20G15 | Balance 100kΩG | R1353 | ERD10TJ183 Carbon 18kΩ ±5% 1/8W | |
| | EVBV31C20A54 | Bass 50kΩA | R1354 | ERD10TJ222 Carbon 2.2kΩ ±5% 1/8W | |
| | EVBV31C20A54 | Treble 50kΩA | R1355 | ERD10TJ104 Carbon 100kΩ ±5% 1/8W | |
| | EVBV29C20A14 | Volume 10kΩA | R1356 | ERD10TJ153 Carbon 15kΩ ±5% 1/8W | |
| | | | R1357 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | | | R1358 | ERD10TJ104 Carbon 100kΩ ±5% 1/8W | |
| | | | R1359 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | | | R1360 | ERD10TJ561 Carbon 560Ω ±5% 1/8W | |
| | | | R1361 | ERD10TJ561 Carbon 560Ω ±5% 1/8W | |
| IC130 IC131 | OTHER PARTS | | R1362 | ERD10TJ103 Carbon 10kΩ ±5% 1/8W | |
| | TSE80132 | TV/Radio/Tape/Line Function Switch | R1363 | ERD10TJ472 Carbon 4.7kΩ ±5% 1/8W | |
| | TXAJT4P113A | 4-P Mini. Connector Ass'y | R1364 | ERD25FJ100 Carbon 10Ω ±5% 1/4W | |
| | TXAJT4P114A | 4-P Mini. Connector Ass'y | OTHER PARTS | | |
| | | | VR301 | EVNK0AA00B53 LED Meter Level Control 5kΩB | |
| | | | VR302 | EVNK0AA00B53 LED Meter Level Control 5kΩb | |
| | | | LM | TJS868330 4-P L-Type Mini. Connector Plug | |
| | | | | | |
| | | | | | |
| | | | | | |
| TNP82964-31H | | | | | |
| IC130 IC131 | IC | | | | |
| | TVSLB1405 | LED Meter | | | |
| | TVSLB1405 | LED Meter | | | |

| Ref.No. | Part No. | Description | Ref.No. | Part No. | Description |
|---------------------|-------------------------------|------------------------------------|------------------------|--------------|------------------------------------|
| TNP82965-31H | | | UHF TUNER PARTS | | |
| | TUNER | | Q1 | 2SC2360 | Transistor (RF Amp.) |
| | TNV17903F1F | VHF Tuner | Q2 | 2SC288A-5BE | Transistor (OSC.) |
| | TNV87902F1F | UHF Tuner | Q3 | 2SC2348A | Transistor (IF Amp.) |
| | TRANSISTOR & DIODE | | D1 | MA320B1NR | Diode (Vari. Cap) |
| IC91 | AN5700 | Channel Selector IC | D2 | MA320B1NR | Diode (Vari. Cap) |
| D91 | TVSRD2R4E | Zenner Diode | D3 | MA320B1NR | Diode (Vari. Cap) |
| | CAPACITORS | | D4 | TVS1SS86-02 | Diode (Vari. Cap) |
| C91 | ECEA1CS100 | Electrolytic 10 μ F 16V | TNP82982-31H | | |
| C92 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V | IC | | |
| C93 | ECKD1H222KB2 | Ceramic 2,200PF \pm 10% 50V | IC101 | AN7218 | FM IF Amp. |
| C94 | ECEA16Z4R7 | Electrolytic 4.7 F 16V | IC102 | AN362 | FM Multi |
| C95 | ECKD1H102KB2 | Ceramic 1,000PF \pm 10% 50V | TRANSISTORS | | |
| C96 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V | Q101 | 2SC1686 | FM RF Amp. |
| C97 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V | Q102 | 2SC1359 | FM Mix. (B) |
| C98 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V | Q103 | 2SC1359 | FM OSC. (C) |
| C99 | ECKD1H220JS | Ceramic 22PF \pm 5% 50V | Q104 | 2SC828A | Muting |
| | RESISTORS | | DIODES | | |
| R91 | ERD25TJ471 | Carbon 470 Ω \pm 5% 1/4W | D101 | TVS1S2687 | FM AFC |
| R92 | ERD25TJ472 | Carbon 4.7k Ω \pm 5% 1/4W | D102 | 0A91 | FM DET. |
| R93 | ERD25TJ334 | Carbon 330k Ω \pm 5% 1/4W | D103 | 0A91 | FM DET. |
| | CONTROLS | | D104 | MA150 | FM Meter |
| VR92 | EVNK0AA00B14 | Sub. Tuning 10k Ω B | D111 | 0A91 | AM Meter |
| VR93 | EVNK0AA00B15 | Sub. Tuning 100k Ω B | D112 | 0A91 | AM DET. |
| VR94 | EVNK0AA00B14 | Sub. Tuning 10k Ω B | COILS | | |
| VR95 | EVNK0AA00B15 | Sub. Tuning 100k Ω B | L1001 | TLR80208 | FM Antenna Coil |
| VR96 | EVNK0AA00B15 | Sub. Tuning 100k Ω B | L1002 | TLR80208 | FM OSC. Coil |
| | OTHER PARTS | | L1003 | RLQY75S5 | Trap Coil |
| X92 | EXCUVS01J | U/V Signal Separator | L1004 | TLT331-999 | Peaking Coil 330 μ H |
| | TJS848060 | Phono. Pin Terminal | L1005 | TLT270-999 | Peaking Coil 27 μ H |
| | TJS868330 | 4-P L-Type Mini. Connector Plug | L1081A | TLQ393J106G | Peaking coil 0.039H |
| | TJS868340 | 5-P L-Type Mini. Connector Plug | L1082A | TLQ393J106G | Peaking Coil 0.039H |
| | TJT8529-1 | 6-P Socket Housing | L1101 | RLQY75S5 | Trap Coil |
| | TJT8718 | Socket Housing Terminal | L1102 | TLR80123 | Bar Antenna Coil |
| | VHF TUNER PARTS | | L1103 | ELA7S755C | SW RF Coil |
| Q1 | 2SC2348A | Transistor (RF Amp.) | L1104 | QL02M5 | AM OSC. Coil |
| Q2 | 2SC2348B | Transistor (Mix.) | L1105 | RL02M14 | SW1 OSC. Coil |
| Q3 | 2SC1215 | Transistor (OSC.) | L1106 | ELL7E758C | SW2 OSC Coil |
| D1 | MA56 | Diode (Switching) | TRANSFORMERS | | |
| D2 | MA56 | Diode (Switching) | T1001 | RLI4M101 | FM IF Trans. |
| D3 | MA320GINR | Diode (Vari. Cap.) | T1002 | RLI4M504 | FM DET. Trans. |
| D4 | MA320GINR | Diode (Vari. Cap.) | T1003 | RLI4M506 | FM DET. Trans. |
| D5 | MA56 | Diode (Switching) | T1101 | RLI2M201 | AM IF Trans. |
| D6 | MA56 | Diode (Switching) | T1102 | RLI2M202 | AM IF Trans. |
| D7 | MA56 | Diode (Switching) | T1103 | RLI2M402 | AM DET. Trans. |
| D8 | MA320GINR | Diode (Vari. Cap.) | CAPACITORS | | |
| | | | C1001 | PVC22K20T1LG | Poly Variable |
| | | | C1004 | ECCD1H270JC2 | Ceramic 27PF \pm 5% 50V |
| | | | C1005 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V |
| | | | C1006 | ECCD1H050CC | Ceramic 5PF \pm 0.25PF 50V |
| | | | C1007 | ECCD1H180JC | Ceramic 18PF \pm 5% 50V |
| | | | C1008 | ECCD1H050CC | Ceramic 5PF \pm 0.25PF 50V |
| | | | C1009 | ECCD1H390JC2 | Ceramic 39PF \pm 5% 50V |
| | | | C1010 | ECKD1H103KB | Ceramic 0.01 μ F \pm 10% 50V |
| | | | C1011 | ECKD1H103PF2 | Ceramic 0.01 μ F +100% -0% 50V |
| | | | C1012 | ECCD1H050CS | Ceramic 5PF \pm 0.25PF 50V |
| | | | C1013 | ECCD1H080DS | Ceramic 8PF \pm 0.5PF 50V |
| | | | C1014 | ECCD1H390JS | Ceramic 39PF \pm 5% 50V |

| Ref. No. | Part No. | Description | | | | Ref. No. | Part No. | Description | | | |
|----------|--------------|--------------|--------------|--------------|------|------------------|--------------|--------------|--------------|--------------|-------|
| C1015 | ECCD1H120JS | Ceramic | 12PF | ±5% | 50V | C1116 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V |
| C1017 | ECCD1H060CS | Ceramic | 6PF | ±0.25PF | 50V | C1131 | ECEA1AS471 | Electrolytic | 470μF | | 10V |
| C1018 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V | C1132 | ECKD1H102KB2 | Ceramic | 1,000PF ±10% | | 50V |
| C1019 | ECKD1H331KB | Ceramic | 330PF | ±10% | 50V | C1133 | ECEA1HS010 | Electrolytic | 1μF | | 50V |
| C1020 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C1134 | ECEA1CS100 | Electrolytic | 10μF | | 16V |
| | | | | | | C1135 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V |
| C1050 | ECKD1H102KB2 | Ceramic | 1,000PF ±10% | | 50V | C1136 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V |
| C1051 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | C1137 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V |
| C1052 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V | C1138 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V |
| C1053 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V | C1139 | ECQM05683JZ | Polyster | 0.068μF | ±5% | 50V |
| C1054 | ECKD1H331KB | Ceramic | 330PF | ±10% | 50V | C1140 | ECCD1H270J | Ceramic | 27PF | ±5% | 50V |
| C1055 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | | | | | | |
| C1056 | ECCD1H271J | Ceramic | 270PF | ±5% | 50V | C1141 | ECKD1H223PF2 | Ceramic | 0.022μF | +100% -0% | 50V |
| C1056 | ECCD1H271J | Ceramic | 270PF | ±5% | 50V | C1180 | ECEA1AS101 | Electrolytic | 100μF | | 10V |
| C1057 | ECCD1H271J | Ceramic | 270PF | ±5% | 50V | | | | | | |
| C1059 | ECEA1HSR47 | Electrolytic | 0.47μF | | 50V | RESISTORS | | | | | |
| C1060 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | R1001 | ERD10TJ104 | Carbon | 100kΩ | ±5% | 1/8 W |
| C1061 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | R1002 | ERD10TJ270 | Carbon | 27Ω | ±5% | 1/8 W |
| C1062 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | R1003 | ERD10TJ151 | Carbon | 150Ω | ±5% | 1/8 W |
| C1081 | ECEA1CS330 | Electrolytic | 33μF | | 16V | R1004 | ERD10TJ474 | Carbon | 470kΩ | ±5% | 1/8 W |
| C1083 | ECQM05153JZ | Polyester | 0.015μF | ±5% | 50V | R1005 | ERD10TJ471 | Carbon | 470Ω | ±5% | 1/8 W |
| C1084 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | R1006 | ERD10TJ751 | Carbon | 750Ω | ±5% | 1/8 W |
| C1085 | ECQM05182JZ | Polyester | 1,800PF | ±5% | 50V | R1007 | ERD10TJ104 | Carbon | 100kΩ | ±5% | 1/8 W |
| C1086 | ECQM05153JZ | Polyester | 0.015μF | ±5% | 50V | R1009 | ERD10TJ122 | Carbon | 1.2kΩ | ±5% | 1/8 W |
| C1087 | ECEA1ES4R7 | Electrolytic | 4.7μF | | 25V | R1010 | ERD10TJ102 | Carbon | 1kΩ | ±5% | 1/8 W |
| C1088 | ECQM05182JZ | Polyester | 1,800PF | ±5% | 50V | | | | | | |
| C1089 | ECFWD152KAY | Ceramic | 1,500PF ±10% | | 25V | R1011 | ERD10TJ104 | Carbon | 100kΩ | ±5% | 1/8 W |
| C1090 | ECQM05332JZ | Polyester | 3,300PF | ±5% | 50V | R1012 | ERD10TJ473 | Carbon | 47kΩ | ±5% | 1/8 W |
| C1091 | ECFWD152KAY | Ceramic | 1,500PF ±10% | | 25V | R1051 | ERD10TJ101 | Carbon | 100Ω | ±5% | 1/8 W |
| C1092 | ECQM05332JZ | Polyester | 3,300PF | ±5% | 50V | R1052 | ERD10TH102 | Carbon | 1kΩ | ±5% | 1/8 W |
| C1093 | ECQS1331JWT | Styrol | 330PF | ±5% | 100V | R1053 | ERD10TJ470 | Carbon | 47Ω | ±5% | 1/8 W |
| C1094 | ECEA50ZR22 | Electrolytic | 0.22μF | | 50V | R1054 | ERD10TJ102 | Carbon | 1kΩ | ±5% | 1/8 W |
| C1095 | ECEA50ZR47 | Electrolytic | 0.47μF | | 50V | R1055 | ERD10TJ102 | Carbon | 1kΩ | ±5% | 1/8 W |
| C1096 | ECEA1CS100 | Electrolytic | 10μF | | 16V | R1056 | ERD10TJ682 | Carbon | 6.8kΩ | ±5% | 1/8 W |
| C1097 | ECEA1HS010 | Electrolytic | 1μF | | 50V | R1057 | ERD10TJ822 | Carbon | 8.2kΩ | ±5% | 1/8 W |
| C1098 | ECQM05473JZ | Polyester | 0.047μF | ±5% | 50V | R1058 | ERD10TJ821 | Carbon | 820Ω | ±5% | 1/8 W |
| | | | | | | R1059 | ERD10TJ153 | Carbon | 15kΩ | ±5% | 1/8 W |
| C1100 | ECCD1H040CC | Ceramic | 4PF | ±0.25PF | 50V | R1062 | ERD10TJ102 | Carbon | 1kΩ | ±5% | 1/8 W |
| C1101 | ECCD1H560JP | Ceramic | 56PF | ±5% | 50V | R1063 | ERD10TJ104 | Carbon | 100kΩ | ±5% | 1/8 W |
| C1102 | QCV2120 | Trimmer | | | | R1081 | ERD10TJ183 | Carbon | 18kΩ | ±5% | 1/8 W |
| C1103 | | | | | | | | | | | |
| C1104 | ECCD1H470JPN | Ceramic | 47PF | ±5% | 50V | R1082 | ERD10TJ473 | Carbon | 47kΩ | ±5% | 1/8 W |
| | | | | | | R1083 | ERD10TJ823 | Carbon | 82kΩ | ±5% | 1/8 W |
| C1107 | ECCD1H271JC | Ceramic | 270PF | ±5% | 50V | R1084 | ERD10TJ272 | Carbon | 2.7kΩ | ±5% | 1/8 W |
| C1108 | ECCD1H151JC | Ceramic | 150PF | ±5% | 50V | R1085 | ERD10TJ272 | Carbon | 2.7kΩ | ±5% | 1/8 W |
| C1109 | ECCD1H150JC | Ceramic | 15PF | ±5% | 50V | R1086 | ERD10TJ561 | Carbon | 560Ω | ±5% | 1/8 W |
| C1110 | ECV1ZW10X53N | Variable | | | | | | | | | |
| C1111 | ECV1ZW10X53N | Variable | | | | R1087 | ERD10TJ682 | Carbon | 6.8kΩ | ±5% | 1/8 W |
| C1112 | ECQS136JWT | Styrol | 360PF | ±5% | 100V | R1088 | ERD10TJ332 | Carbon | 3.3kΩ | ±5% | 1/8 W |
| C1113 | ECCD1H070CC | Ceramic | 7PF | ±0.25PF | 50V | R1090 | ERD10TJ682 | Carbon | 6.8kΩ | ±5% | 1/8 W |
| C1114 | ECQS1472JWT | Styrol | 4,200PF | ±5% | 100V | R1091 | ERD10TJ332 | Carbon | 3.3kΩ | ±5% | 1/8 W |
| C1115 | ECKD1H103PF2 | Ceramic | 0.01μF | +100% -0% | 50V | R1093 | ERD10TJ273 | Carbon | 27kΩ | ±5% | 1/8 W |
| | | | | | | R1094 | ERD10TJ102 | Carbon | 1kΩ | ±5% | 1/8 W |
| | | | | | | R1095 | ERD10TJ682 | Carbon | 6.8kΩ | ±5% | 1/8 W |

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---------------------------------|--------------|----------------------------|----------|-----------|---|
| R1101 | ERD10TJ270 | Carbon 27Ω ± 5% 1/8 W | M29 | QBL2900C. | Erase Safety Lever |
| R1102 | ERD10TJ391 | Carbon 390Ω ± 5% 1/8 W | M30 | QBC1193A | Erase Safety Lever Spring |
| R1103 | ERD10TJ103 | Carbon 10kΩ ± 5% 1/8 W | M31 | QBN1479 | Idler Spring |
| R1104 | ERD10TJ270 | Carbon 27Ω ± 5% 1/8 W | M32 | QBN1488 | Pressure Roller Spring |
| R1130 | ERD10TJ470 | Carbon 47Ω ± 5% 1/8 W | M33 | QX10088 | Idler Lever Ass'y |
| R1131 | ERD10TJ473 | Carbon 47kΩ ± 5% 1/8 W | | | |
| R1132 | ERD10TJ103 | Carbon 10kΩ ± 5% 1/8 W | M34 | QXR0553 | Pause Rod Ass'y |
| R1133 | ERD10TJ682 | Carbon 6.8kΩ ± 5% 1/8 W | M35 | QXR0503 | Record Rod Ass'y |
| R1134 | ERD10TJ822 | Carbon 8.2kΩ ± 5% 1/8 W | M36 | QGO1227C | Record Button |
| R1135 | ERD10TJ153 | Carbon 15kΩ ± 5% 1/8 W | M37 | QXR0549 | Playback Rod Ass'y |
| R1180 | ERD25TJ471 | Carbon 470Ω ± 5% 1/4 W | M38 | QXR0551 | Rewind Rod Ass'y |
| CONTROLS | | | M39 | QXR0550 | Fast Forward Rod Ass'y |
| VR101 | EVNK4AA00B14 | Freq. Adj. 10kΩB | M40 | QXR0548 | Stop Rod Ass'y |
| VR102 | EVNK4AA00B53 | Separation Adj. 5kΩB | M41 | QXR0552 | Elect Rod Ass'y |
| C-R COMBINATIONS | | | M42 | QXD0054B | Takeup Reel Table |
| X1001 | TXCFF88108W | FM Band Pass Filter | M43 | QBC1273 | Back Tention Spring |
| X1002 | TFCS10R7M-1 | 10.7MHZ Cerap | M44 | QDR1103 | Supply Reel Table |
| OTHER PARTS | | | M45A | XSN26+6 | Screw |
| S0 | TSE80331 | LW Selector Switch | M45B | XWA26B | Washer |
| S1 | TSE80331 | MW Selector Switch | M46 | QML2904B | Pause Lever |
| S2 | TSE80331 | SW Selector Switch | M47 | QML2912 | FF Operation Lever |
| S3 | TSE80331 | FM Selector Switch | M48 | QBN1477A | FF Arm Spring |
| | XAM64C120 | Pilot Lamp | M49 | QXG1023B | FF Gear Arm Ass'y |
| | XAM64C260 | Pilot Lamp | | | |
| | TJS868250 | 3-P Mini. Connector Plug | M50 | QBP1664 | Operation Rod Spring |
| | TJS868270 | 5-P Mini. Connector Plug | M51 | QMR1473A | Lock Rod |
| | TXAJT5P0S2 | 7-P Mini. Connector Ass'y | M52 | QML2905B | Switch Arm |
| | TXAJT7P006 | 7-P Mini. Connector Ass'y | M55 | QXL0980B | Audio-Stop Drive Lever Ass'y |
| QUN 1845 CASSETTE RECORD | | | M55-1 | QBT1489E | Audio Stop Spring |
| M1 | XTN26+6B | Screw | M56 | QML2902 | Eject Arm |
| M3 | XSN26+3 | Screw | M57 | QBT1773DM | Eject Arm Spring |
| M4 | QMG0009 | Tape Guide | M58 | MMT5ST9RA | Motor |
| M5 | XSN26+12 | Screw | M59 | QBG1539 | Motor Cushion |
| M6 | QBT1813E | Erase Head Rod :Spring | M60 | QHQ1223B | Motor Holding Screw |
| M7 | QMR1474A | Erase Head Rod | M61 | QXP0153B | Motor Pulley Ass'y |
| M8 | XSN2+8 | Screw | M63 | QMA2676B | Belt Guide |
| M9 | QBC1278A | Head Spring | M64 | QDB0219 | Flywheel Belt |
| M10 | QBN1481 | Play Spring | M65 | QBW2049A | Poly. Slider |
| M11 | XSN26+6 | Screw | M66 | QXF0113C | Flywheel |
| M12 | QMZ166C | Head Spacer | M67 | QXH0218B | Flywheel Retainer |
| M13 | QXK168/B | Head Base Plate | M68 | XTN3+15B | Erase Safety Lever |
| M14 | XUC2FT | Stop Ring | M96 | QBP1662 | Lock Rod Spring |
| M15 | QBN1478A | Audio-Stop Detector Spring | S5 | QSB0186MA | Leaf Switch. (Motor ON/OFF) |
| M16 | QXL0982 | Audio-Stop Detector Lever | E1 | QWY4113Z | Record/Playback Head |
| M17 | XUC3FT | Stop Ring | E2 | QWY21292 | Erase Head |
| M18 | QXL0979A | Pressure Roller Ass'y | | QEF0611 | 3-P Mini. Connector Ass'y (Record Head) |
| M19 | QBP1659A | Head Plate Pressuer Plate | | QEF0612 | 3-P Mini. Connector Ass'y (Erase Head) |
| M20 | QDK1017 | Steel Ball | | | |
| M21 | QDC0084 | Tape Counter | | | |
| M22 | QDB0220 | Counter Belt | | | |
| M23 | XTN3+12B | Screw | | | |
| M24 | QMZ1167B | Counter Table | | | |
| M25 | XTN3+10B | Screw | | | |
| M26 | XUB4FT | Circlip | | | |
| M27 | QBN1480A | Pause Lock Spring | | | |
| M28 | QML2898 | Pause Lock Plate | | | |